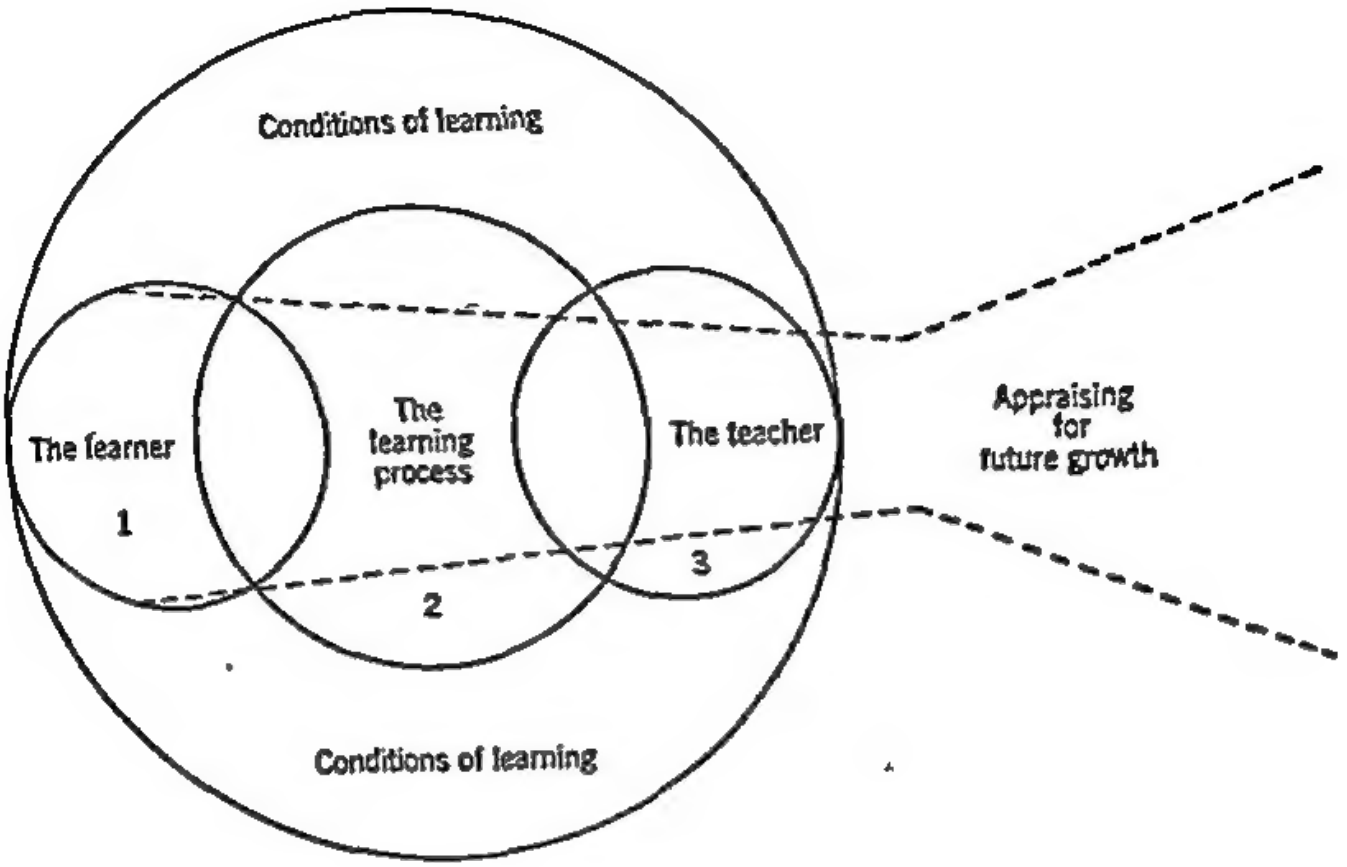
PSYCHOLOGY OF LEARNING AND TEACHING



THE BLUEPRINT FOR PSYCHOLOGY OF LEARNING AND TEACHING

The inclusive purpose of educational psychology is to facilitate pupil growth. A basic principle is that growth is a product of the interaction of the organism with its environment. Learning begins with the organism. Hence, we study the nature of the pupil's reactions and the kinds of conditions which facilitate or hamper growth and learning.

The overlapping of circles 1 and 2 represents the fundamental features of educational psychology. But, increasingly, there is a realization that the teacher teaches what he is as much as what he says. The diagram indicates this focal position of the teacher. It is the teacher who uses the basic features of the learning process to interpret the conditions of learning to the pupil in such a way as to foster maximum growth.

The four circles are, then, the four parts of the book, all of them culminating in the kind of appraisal that will stimulate growth *after* the teacher and the school cease to be contemporaneous influences.

Psychology of Learning and Teaching

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PSYCHOLOGY OF LEARNING AND TEACHING

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To

WRIGHT, RODGER, AND RICHARD

PREFACE

THE IDEA for this volume came from a series of meetings held by one of three committees appointed by Superintendent Rex Putnam of the Oregon State Department of Education to examine the content of courses required for certification. Each member of the committee on educational psychology submitted to me as chairman the outline or syllabus of the course as taught in his institution. Twelve public and private (Catholic and Protestant) institutions were represented. The major topics were quickly determined, but only after careful study was it decided to eliminate topics on methods of teaching, guidance, and adult education. These, it was felt, overlapped material that properly belonged to other basic professional courses. In this book, an attempt is made to keep to a minimum material likely to be found in other courses.

In addition to the work of this committee, I have been strongly influenced by the *Yearbooks of the National Society for the Study of Education*, Vol. 41, Part 2, 1942, and Vol. 49, Part 1, 1950. The Oregon committee and the Society's committees stressed the practical aspects of psychological theories. These theories are illustrated in this book, and the reader is consistently asked to extend the list of implications and applications.

Educational psychology, like other studies, is undergoing a steady process of alteration. Notable among the changes is a shift in emphasis from physiological psychology to one oriented in social groupings. Another shift is from artificial and fragmented experimental studies of learning to study of children and youth in the classroom and community. These shifts are recognized in this book. Not only is stress laid upon the fact that pupils have a body and a potential for mental development, but emphasis is also made on the kind of home and culture which conditions their emotions and intellect. Experimental evidence is introduced and interpreted in the light of such trends as the foregoing.

Underlying principles of psychology are presented in many different contexts. Illustrative cases are used sparingly. It is my belief that the citing of a case produces an unjustified feeling of understanding on the

part of the student when in reality that case is *only one of many* which could illustrate the working of the principle. No book can anticipate all the problems a teacher will later encounter. Therefore, it is of primary importance to understand the principle or generalization—the common *modus operandi*. The emphasis is placed on *why* behaviors are as they are and *why* certain factors have the influence they have.

The following topics receive more space and attention than may be found in other texts on educational psychology: growth as a pervasive factor in learning and teaching, the role of the social setting, mental hygiene with emphasis on the teacher's dynamic influence, and evaluation as a continuous process rather than as a culminating act. The four parts of the book are best explained by reference to "The Blueprint for Psychology of Learning and Teaching" (frontispiece).

The films listed at the end of each chapter may prove more useful if a committee of students is given responsibility for selection, preview, and follow-up discussion. This procedure need not interfere with comments or evaluations by the instructor, but it will serve to make students more active in the learning process. Further, it will give them practice in the utilization of this valuable learning aid.

Summaries of chapters are, after the first chapter, presented in two parallel columns: (1) Psychological Principles and (2) Practical Applications. The headings are oversimplified. Psychological principles may be described as principles, theories, corollaries, existing beliefs, guesses, etc. For each "principle" there may be many more practical applications; for each practical application there may be many more justifying principles. It cannot be stressed too strongly that the parallel lists are *suggestive* and *representative*, planned to show that there is a relationship between theory and practice. Therefore, a valuable exercise in understanding and application will be to extend the lists. If the lists are not studied with this extension in mind, there is danger that the relationships of psychology to education may appear to be more limited than is the actual case.

The book has been kept as short as possible for three reasons. First, there is less likelihood that the edge will be taken off other professional courses—guidance, methods, curriculum development, etc. Second, the instructor must be free to develop his own points of emphasis and to suggest his favorite readings. With a short volume, this can be done without causing the student to feel that an important part of the course has been omitted. Third, students are often apprehensive of the encyclopedic nature of some texts.

Thanks are due to many persons for helping with various phases of this work. Dr. George B. Martin, Willamette University, meticulously read the entire manuscript and offered valuable suggestions. Dr. Victor

N. Phelps, Dr. Frank Learned, Dr. Warren W. Wilcox, and Dr. Henry Stevens, all of the General Extension Division of the Oregon State System of Higher Education, read chapters and offered suggestions. In addition, Dr. Phelps gave me material on how to analyze a test score by using the quadrant of expectancy. To the best of my knowledge, this is the first time the material has been presented in printed form. Mrs. Veldon Diment carefully, critically, and promptly typed and retyped the manuscript. Her promptness was an incentive to steady work on my part. Thanks are also due to the many publishers who permitted quotation of some of their materials; acknowledgments are specifically made in footnotes. My wife, Evelyn, has kept my time free from entanglements that would have hindered steady application to the work—at the same time insisting that there are limits to the working day.

HAROLD W. BERNARD

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PART ONE

TOMORROW'S TEACHER TODAY'S STUDENT AND PSYCHOLOGY

BEHAVIOR IS caused—it is goal-seeking in nature. This fact forms the orientation of Part I. What educational psychology is and does is presented as a means of getting you, as a future teacher, to identify yourself with the subject. Then, the application of psychological theory to an immediate and practical problem—that of improved methods of study—serves a dual purpose. *First, the chapters are designed as approaches to your present motivation; and second, they* are planned to show what you should learn for later application. Part I concludes by focusing attention on the individual teacher, *as a teacher of what he is as a person.* Here the reader is prompted to examine and improve himself because he will be a cause of the behavior of his own pupils. The teacher is very much a part of what pupils learn.

I

THE FIELD OF EDUCATIONAL PSYCHOLOGY

Psychology is designed to predict the individual's reaction to his environment. You, as a student, can apply psychology to your own behavior and make your actions more effective. You can, for example, become a better learner by determining and stating your goals precisely. You can avoid difficulties by making a preliminary survey of the day's work or the term's work and by carefully studying the requirements of the profession you have selected. You can develop the kind of mental set that will make your classwork a pleasure or one that will make the performance of required tasks a burdensome duty. Such behaviors are among the concerns of educational psychology.

A big-game hunter might be used as a parallel example. The hunter who wishes to get directly to the haunts of big game must ask, "What kind of country will I get into? How do I keep on the right trail? What is the best alternative route? What equipment will I need? How long will it take?" You, as a prospective teacher, should ask, "What is educational psychology? What will I get out of its study? What understandings do I need? How can these understandings be applied?" A partial and preliminary answer to such questions will make you a more efficient learner by clarifying your objectives. It should be mentioned, too, that when you do become a teacher your first duty might well be to tell your pupils *what their study will do for them*—what they will get out of it. They should know how their study will increase the effectiveness of their lives. You and your future pupils may apply psychology to learning and cause it to be more economical and better directed. Psychology may serve to avoid random activity and the waste of time. Sometimes the application of sound psychology can be a matter of imitation or accident. Preferably the application should be the result of knowledge and intent. A textbook can supply an outline of knowledge. The student must supply the intent to apply what is learned.

RELATIONSHIPS OF PSYCHOLOGY TO EDUCATION

The Meaning of Psychology. It has been said that psychology is a way of putting what we all know into language that nobody can understand. There are two errors contained in this statement. One is that people do not always know what they thought they knew. Men have not always *known* what psychology teaches. For example, we have not always known how important it is to love, cuddle, and fondle a baby; how futile it is to attempt to *make* a child learn (there was a time when the motto of the school was "Learn or get out"); how real psychological or emotional illness is (some still think there is no difference between pretended illness and illness as an escape mechanism); and how necessary it is to have an environment that will stimulate optimum growth.

The second error is that the things we *thought* we knew are only partial truths. Ideas now undergoing revision include the nature of intelligence and its operation, the best method for motivating students, the most successful method of presenting school subjects in an advantageous psychological setting, and the belief that hard work will get one to the top of the ladder of success. There are no simple answers to the many questions regarding human behavior. Educational psychology will not make you a good teacher, but it can provide the framework for improvement.

The roots of the word "psychology" may serve as a starting point for understanding what it is. The first part of the word is derived from *psyche*, meaning the "soul" or the "mind." "Soul" was not originally thought of in a religious connotation but as the inner flame, or the center, the spirit, of man. The latter part of the word refers to the study, or science, of the field that is indicated by the first part of the word, *i.e.*, "sociology," "biology," or "philology." Thus, psychology was originally the study, or science, of the soul or the mind.

Since experience influences the behavior of an organism and since behavior is an attempt of the organism to adjust to the multiple stimuli which impinge upon it, an acceptable definition of psychology is "the study of the organism's adjustment to its environment." This is a simple definition, but it is by no means a simple concept. The organism is an exceedingly complex phenomenon consisting of heart, brain, spinal cord, muscles, bones, glands, blood, sensory organs, and so on without end.[1] Adjustment and the process of adjusting are likewise complex. They are lifelong processes continuing from the moment of conception throughout the span of life. The environment is no less complex—consisting as it does

[1] The words "without end" are used advisedly since we do not know all there is to know about any one of the constituents, *e.g.*, blood.

of social, economic, geographical, institutional, physical, and similar factors which bear on the organism's processes of adjusting. Thus, it can be seen that there is danger of oversimplification. There can be no satisfactory simple, capsule assertion of what psychology is or what it does. Nevertheless, we will say in summary that psychology is mainly concerned with the continuing study of the processes (adjustments) through which inherent potentialities (the organism) are affected by stimulating circumstances (the environment) to produce new, and we hope better, ways of adjusting.

Branches of Psychology. Psychology bears on *all* activities. Nothing we hear, say, or do is without its psychological implications. It has become necessary, as knowledge has increased and the avenues for more investigations have been opened, to make many divisions of psychology. These divisions single out of the entire realm of psychology particular phenomena for study. However, the divisions are not sharp. Phenomena which operate in one area are also pertinent in another. The distinctions are made merely for the sake of convenience in academic discussion; there is no sharp line of demarcation when it comes to *applying* psychology.

General psychology is the basic study which cuts across the various branches of psychology (applied, comparative, educational, etc.). It stresses such problems as what and how we see and hear and what causes emotions and how they can be controlled. The nature, measurement, and import of intelligence are important considerations. The nature and extent of differences between people—height, weight, glandular balance, sensory acuity, and intelligence—are pervasive problems.

Comparative, or animal, psychology is devoted to the development of knowledge about living organisms other than human beings. Though the study is of tadpoles, cats, dogs, mice, rats, and primates, the usual objective is to aid in the formulation of hypotheses. These may prove valuable in devising experiments that will make possible the prediction and, ultimately, the control of human behavior.

Applied psychology is many things. As the name implies, it is an attempt to use psychology in solving practical problems, such as predicting ability to perform certain jobs and professions. It may be applied to the devising of advertising appeals that will sell more of a stated product. The problem may be one of devising propaganda that will influence the adoption of a certain point of view. Child psychology, adolescent psychology, and educational psychology are not included under the heading of applied psychology, but in practice they are applied to certain classes of problems.

Industrial psychology might well be considered a subdivision of applied psychology since it has to do with the accurate placement of men

in accordance with their abilities, interests, and experience. It deals with the securing of high degrees of accord between employer and employee and between employee and employee. The aim is to secure greater efficiency—more production for the expenditure of less time and energy.

Social psychology is the study of individuals as they behave toward other individuals and within social groups. It is a combination of psychology and sociology and deals with such matters as the influence of social class on behavior, leadership, crowd behavior, the family, church, and the like. Illustrative of the overlapping between the branches of psychology is the fact that such matters as propaganda, advertising, delinquency, and the role of language are aspects of social psychology and are also considered in other branches.

Abnormal psychology deals with the characteristics of, and the conditions that lead to, the behavior of those individuals who are mentally ill. The study is directed toward the avoidance of mental illness and the cure of those who have already developed abnormality.

Child psychology is concerned with the factors that influence early development. Heredity, prenatal influences, family relationships, play associations, and community factors are studied to determine the predominant influences that condition the first years of life. Physical growth, motor development, language responses, and growth in thinking, feeling, and learning are all considerations of child psychology.

Adolescent psychology is, like child psychology, an artificial but highly practical division of the phenomena of growth and development of the individual. At one time it centered about the development of sexual maturity. More recently it is coming to mean the study of the individual as he emerges into the wider realms of mature society and of the influence upon him of the culture in which he lives.

Other branches, or rather subdivisions, of psychology deal with problems of mature adjustment (mental hygiene), senescence, parent-child relationships, and marriage. One such branch, called genetic psychology, traces the individual from his ancestry and childhood through maturity and senility. Another branch, which will be dealt with in more detail later, is that called educational psychology, or the psychology of teaching and learning.

The Aims of Psychology. The aim of the study of psychology is to understand and direct behavior. This inclusive aim must be broken into subordinate aims which will embrace the various elements involved in behavior, *i.e.*, the situation, the organism, and the response. Thus, the aims may be stated as follows:

1. Psychology aims to understand the kinds of stimuli most likely to obtain desirable and adequate responses. Stimuli are both internal and

external, so psychology studies the organism as well as the surrounding environment.

2. Psychology seeks to know the nature of the individual. This will include his inherited equipment—glands, reflexes, sense organs, appetite, etc. It will also include the residue of previous experiences as the individual grows physically and matures psychologically. There is an attempt to formulate generalizations regarding the characteristic qualities or attributes of childhood, adolescence, and maturity.

3. Psychology aims to formulate principles of learning—to determine how successful responses are selected and consolidated into behavior patterns.

THE MEANING AND AIMS OF EDUCATIONAL PSYCHOLOGY

The Purpose of Educational Psychology. Educational psychology is one of the branches of psychology—parallel to social, abnormal, and other psychologies. It is one of the phases of applied psychology—the study applied to the problems of teaching and learning. The primary concerns of educational psychology are (1) the nature and characteristics of the learner, (2) the nature of learning processes, (3) the manner in which these processes may be facilitated by the teacher, (4) the establishment of scientific principles for the procedures employed in formal education (see frontispiece for blueprint).

An expansion of these primary concerns will more clearly reveal the field of educational psychology. The nature of the learner will be revealed through a study of individual differences in intelligence, motivation, past experiences, and bodily vigor. The nature of the learner is also approached through the study of the outstanding characteristics of childhood and adolescence. The nature of what is to be learned is revealed through investigation of the relative difficulty of school subjects, the meaningfulness of the material for the individual, the situation in which the material is presented, and the degree of concreteness or specificity of the material. The nature of practical learning depends on the extent to which the material satisfies a need or desire of the learner. A study of economical processes of learning results in the formulation of principles for effecting learning, such as the role of motivation, drill, experimentation, experience, meaning, and establishment of goals. Discussion of the scientific bases of education will result in an evaluation of various teaching procedures.

The aim of educational psychology is simply to understand how the learning processes of pupils may be most effectively guided. This aim will be accomplished to the extent to which the study of educational psychology makes a difference in your own teaching, learning, and living. You cannot afford to teach as you were taught. Improved techniques are

too readily available for contemporary teachers to be satisfied with the techniques that were used in their student days. We cannot afford to continue to deserve the accusation that instruction today is fundamentally no better than it previously was (6, p. 4[2]).

Nevertheless, it is probably true that the radical changes that could be made in teaching have only begun to be made. The hints provided in current writings and discussion should result in greatly improved practice. Your study can lead to the change which is needed only if you, as a teacher, see to it that knowledge is applied. The study of educational psychology can, and should, make a difference in your learning. You will see the value of establishing aims or objectives, of reviewing immediately, of spaced rather than massed practice, of knowing exact definitions, of periodic review, of efficient reading habits, and of good physical health habits. A studied application of educational psychology to your own learning will mean that you will probably be better able to help your pupils apply effective learning principles (38). The study of educational psychology should make a difference in your own living because of the empirical fact that you teach what you are as well as what you say. Pupils quickly adopt, at least in part, the personality characteristics of their teachers, and it therefore behooves you to be in the best possible mental health. We may now summarize by reiterating that the aim of educational psychology is to help you improve your own living, learning, and teaching because all of these things are avenues for stimulating and directing the learning processes of children.

An Illustration of the Functioning of Educational Psychology. There is no universal agreement about exactly what educational psychology should do and be (129). In general, however, its purpose is to make learning more purposeful, lasting, and economical. It is designed to improve effectiveness in teaching. And its purpose also is to help pupils and teachers live more harmonious and enjoyable lives. This threefold purpose of educational psychology can be illustrated by a problem that will in some form face every teacher—a fifth-grade boy who cannot read so well as his peers and for whom reading is an unwelcome part of the school day. Educational psychology plays its role by suggesting solutions to the difficulty so that the pupil may progress more satisfactorily.

We wish to know something about the boy who is embarrassed and resentful during reading activities. Various tests can be given which will provide insight into the kind of boy he is. Achievement tests will indicate whether or not he is doing fifth-grade work in arithmetic, spelling, and social studies. If he is, then the teacher has an indication that reading is a

[2] The first number in the parentheses refers to the number of the item in the Bibliography at the end of the book. A specific page, if any, is indicated by the page number which follows.

specific difficulty. If he is below grade in all subjects, then reading is only one area of retardation. If reading is his specific difficulty, then attention must be directed to reading; but if he has difficulty in all subjects, it is an indication that all his work should be geared down. An intelligence test can help confirm the impressions gained from achievement tests. Such a test may indicate that he appears to have the ability to do fifth-grade reading, in which case matters of motivation, past experience, and specific factors (vocabulary, phonics, or thought gathering) must be explored. If his indicated ability is low, perhaps it is advisable to stop "pressuring him" to achieve—he may be doing as well as can be expected. Other test data regarding specific aptitudes (art, music, mechanics) may indicate that relating reading to some area of strength would be a motivating factor.

Health data may be important in getting at the cause of difficulty. If the boy does not hear well, he may have missed some of the explanations given by the teacher or may have misunderstood the instructions. Perhaps the printed appearance of the word suggests nothing which is familiar to him in terms of what he has heard. If he does not see well, he will have missed some of the material written on the board. Reading may be distasteful because of actual physical pain, caused by strain. If the boy has some glandular imbalance or dietary deficiency, the energy available for school tasks is limited. Listlessness and restlessness constitute barriers to success in academic activities—and they serve as symptoms of difficulty which the teacher schooled in educational psychology must interpret. Getting at the cause of reading difficulty may improve the child's whole life.

Perhaps this fifth-grade boy's difficulty lies in the area of motivation. It may be that, in terms of *his* experience, goals are not clearly defined. He may fail to see the importance of the activities being pursued. This rather frequently happens in two extreme cases: one in which the pupil comes from a home of low socioeconomic status and the parents are not convinced of the value of schooling, and, on the other hand, one in which too much pressure is put on the child and he rebels against any further attempt at conformity to parental expectations. Possibly there are tensions in the home that keep the child from appreciating the importance of school tasks—sickness of his mother, unemployment of his father, the marriage of a sister, or the drafting of a brother. He may see no relationship between his ambition to be a truck driver, a cowboy, a circus bareback rider, or even a scientist and reading about Indians or exploration. Work needs to be done regarding his level of aspiration—what he desires to accomplish. Again, the remedy may affect his entire existence.

It may be that none of the above suggestions is fruitful for the slow reader in the fifth grade. The difficulty may lie in the relationship which

exists between the teacher and the pupil. If there is hostility, suspicion, or a feeling of unfriendliness, the youngster will not be inclined to put forth his best effort. The teacher is responsible for evidencing an interest in the child's welfare, for revealing an attitude of friendliness, and for indicating a tolerance for his shortcomings and personal liabilities. Much will be accomplished through a genuine understanding of the nature of the child and the nature of his difficulties.

Much of the foregoing can be illustrated in a case reported by a superintendent of schools:

> Timothy was a talented youth, although as his English teacher I must confess that the mark I gave him at the end of each of the first two marking periods did not in any way reflect his inherent ability.
>
> In the comments I penned on his report card, opinions were expressed concerning his indifference, his uncooperative attitude, and his lack of effort. When Tim's second report was returned to me, I noticed that Tim's father had written on the space reserved for parents' reactions the pithy comment, "I am dissatisfied, too."
>
> But the situation changed markedly in February. By chance I learned that Tim was interested in tennis. I asked him to stay after school, and in the conversation I mentioned some of the major tournaments I had seen.
>
> Because of his interest, I invited him to my home on a Saturday afternoon to meet my eldest son, who had acquired some prominence as a local netster. When Tim left my home, after a demonstration of tennis strokes, he took with him a half-dozen books on court technics and strategy.
>
> Frequently thereafter he stayed after school to talk to me about his reading. He developed an eagerness to give expository talks to his classmates on his hobby. He wrote several papers on tennis ethics and the lessons taught by the lives of great net stars. His paper on tennis ethics he must have re-written at least a dozen times before it was accepted by the school literary magazine.
>
> I believe no one in the class read or wrote more than he did during the next six weeks. His classmates obtained a liberal education in the romance of tennis.
>
> When I totaled his grades for the next report card I was surprised to see the great advances he had made in his knowledge of and skill in English. When I inscribed his mark on his card, I wrote:
>
> "Timothy has made rapid advances recently as a student, and I congratulate him."
>
> Back came the father's response. "You give my son too much credit, sir. It is you who should be congratulated, for the rapid advances you have made recently as a teacher."[2]

This is the purpose of educational psychology—to understand the factors that go into effective learning so well that they can be manipulated

[2] Thomas E. Robinson, "His Teacher Improved, Too," *NEA Journal*, 41:54, 1952.

to produce an advantageous learning situation. There are other areas that must be studied to understand the Timothys and the fifth-graders who have difficulties in reading, but the study of educational psychology constitutes a big first step.

Educational psychology may function in a learning problem which arises from difficulty in peer adjustments. If one does not get along with his classmates, if he feels that they are rejecting him and that he has no friends, he is likely to worry and make the solution of academic problems more difficult. A search for the cause of such a situation may result in formulating some program for improvement of peer relationships. The social "climate" of the pupil is a major determiner of the course and speed of his learning (213).

There is the possibility that methods of teaching need examination. Perhaps the teaching approach involves abstractions that are beyond the comprehension of the entire class, including that of the pupil with whom we are primarily concerned. Everyday examples, concrete illustrations, specific objects, and related experiences should be used to give meaning to the material. Whatever is taught must be meaningful to the student. It must make sense, it must be understandable, *in terms of the intelligence and experience of the particular individual concerned.*

It would be difficult, if not impossible, to make a specific study of each child in such terms as are described above. As a matter of fact, it is only the exceedingly difficult, and relatively rare, case that requires such detailed study. The generalizations of educational psychology come to the rescue. The principles outlined in the study narrow the range of investigation that needs to be made. The child, the curriculum, the methods, and the social relations can be examined and evaluated in light of the principles that are formulated in educational psychology. Thus, the study of educational psychology teaches one what to look for, provides clues to the solution of problems, and suggests procedures that are generally effective.

The Aims of Educational Psychology in Terms of Outcomes. If we now state the aims of our study in terms of the expected outcomes, the list will include:

1. A knowledge of psychology that will make instruction more effective
2. A knowledge of the foundations of human nature that will serve as the basis for enriching the life of pupils
3. A realization of the implications for teaching which individual differences force upon teachers
4. A realization that conditions outside the school influence learning
5. A realization that emotion and feelings are as important, if not more so, as is the factual knowledge of the pupil

6. A realization that the total personality of the pupil is affected by the over-all conditions (not just the curricular) within the school

7. A realization that educational psychology will be most effective when it influences the life of the teacher both in and out of school.

The Aims of Education in Relation to Psychology. An early step in the study of educational psychology must be to review the purposes of education. The late John Dewey asserted that education "is that reconstruction or reorganization of experience which adds to the meaning of experience, and which increases ability to direct the course of subsequent experience" (70, p. 90). According to this and other definitions, education is a growth and developmental process. It is a way of thinking, living, and doing—a dynamic procedure rather than a static achievement. The function of educational psychology is to help improve these processes of thinking, living, and behaving.

Education is also frequently thought of as a product—a product consisting of knowledge, skills, attitudes, habits, and ideals. Some of the specifically stated objectives of education are (1) language activities—social communication, (2) health, (3) citizenship, (4) social adaptation, (5) leisure-time activities, (6) mental fitness, (7) religious activities, (8) family relationships, (9) nonvocational practical activities, and (10) vocational competence (27, p. 86). A more recent statement gives four major headings, each with eight to twelve subdivisions (81). It can readily be seen that if educational psychology is to make a contribution to education it must be concerned with much besides the important problem of mastery over the fundamental processes of reading, writing, and arithmetic. Educational psychology is concerned with every phase of the school that will produce attitudes and ideals, lead to information and skills, develop healthful habits, and in all these ways contribute to effective living (25, p. 19). In short, educational psychology, like education itself, is concerned with the "whole child," *i.e.*, the major facets of personality, consisting of the mental, physical, emotional, and spiritual. Each of you will be effective teachers, practical educational psychologists, to the extent to which you realize and act upon the basic fact that the child grows as a complex entity. You are more than teachers of reading, arithmetic, geography, algebra, chemistry, or biology. You are teachers of *individual children*—children who have physical energy, who have dissimilar interests, divergent abilities, varied home and community backgrounds, and individual emotional problems.

The Data of Educational Psychology. The aims and outcomes of educational psychology can be realized only through the accumulation of reliable data. There are three major ways in which the basic information is acquired.

One kind of data is derived from teaching experience. Teachers and psychologists have evaluated their work in terms of recurrent phenomena and have drawn certain conclusions about what effective procedures for the future might be. A teacher might, for instance, reflect upon past and present experiences to formulate some generalizations about an effective method for teaching spelling or arithmetic. A psychologist, noting that a child was restless just before mealtime, might recall some prior evidences that activity was greater some hours after eating and conclude on the basis of observation that hunger caused restlessness. Some of the empirical data thus gathered have been disproved by careful experimentation; other such data have been verified. Everyday experience provides hypotheses for setting up the more precise methods of experimentation which will result in valid principles.

Controlled observation utilizes several techniques and is midway between daily experience and that gathered by the third method, experimentation. A questionnaire may serve to focus attention upon some particular aspect of behavior—for instance, the ways in which children act in the classroom when an adult visitor is present or when arithmetic problems are presented as games. A clinical investigation may be made. A child who is caught stealing the possessions of his classmates is studied in terms of his health, his home background, his past school success, his aptitudes, his social competence, and his out-of-school activities. Genetic studies consisting of a continual recording of behavior and growth for a prolonged period are sometimes made of his life and development. Often genetic studies are made by watching babies in cabinets or in rooms which have a one-way glass in one wall. An observer makes detailed notes on what is observed. Thus, details of the observation that are deemed of significance are controlled and systematic. The statement that controlled observation is midway between daily experience and experimentation implies no criticism. The method is, in fact, highly respected and widely used. It possesses the advantage of seeing "the whole child" in a "whole situation."

The third technique is that of experimentation. The fundamental element is that known as the single variable. That is, two or more situations are studied and all elements in the situations are kept as closely identical as possible except for the one thing that is being studied. The experimenter might wish to determine the relative merits of teaching social studies on an assign-study-recite basis or with a problem approach. The age, intelligence, sexes, educational background, teacher, and materials are kept as much alike as possible in the two situations. Only the method of presentation is varied. The relative gain in knowledge of the two groups at the end of the experiment is made the basis for evaluation of the two techniques. There are many variations of the experimental technique, but

the focal point is always an attempt to control contingent factors and vary only one element in the two situations. Many valuable data in educational psychology have been derived by experimental techniques, and they will remain one of the chief sources of information. No one of these sources of information may safely be ignored. Everyday experience may later be substantiated and will always have the advantage of presenting hypotheses which can be tested by the other two techniques. Controlled observation has the advantage of naturalness as contrasted to artificiality. Experimental methods have the merit of more clearly isolating significant aspects of the total situation.

PURPOSE AND ORGANIZATION OF THIS BOOK

The purpose of this book is to review and clarify those fundamentals of psychology which have most direct bearing on learning situations in the school and to point out as cogently as possible the direct implication of these fundamentals for teaching practices. Throughout the book there is a studied attempt to unite psychological theory with educational practice.

The aim inherent in the book is to facilitate transfer of learnings from the classroom in which you study educational psychology to the classroom in which you will work as a teacher. This aim will be implemented by pointing out some of the ways in which the theory may be applied, that is, by indicating some of the common elements existing within psychological theory and advantageous learning situations. The transfer will be further implemented by formulating generalizations which may be used in a variety of situations. There is a danger in this approach against which the student must guard; *i.e.*, the suggested practices do not exhaust the possibilities for sound educational practice. You will do well therefore to consider the applications as *suggestive* and *exploratory* rather than as conclusive and inclusive. As a matter of fact, the psychological generalizations are probably most important, in that they should form the basis for your own adaptation of procedures in effective teaching.

Each chapter after the first is concluded with a summary consisting of a double list. The left-hand column lists psychological principles or theories that have been discussed. The right-hand column suggests some applications of the indicated principle. It can scarcely be stressed too emphatically that the list of applications is *only suggestive*. For each principle there are numerous possible applications. It would be exceedingly profitable for the student if an attempt were made to extend the list of applications for *each* principle to four or five and discuss others that classmates have formulated. Moreover, it should not be thought that a given application has only one justifying principle. One might well start

with the right-hand column and see how many principles could be attached to the item being studied.

SUMMARY

The study of any subject should begin with an understanding, even though it be relatively incomplete, of what comprises the ultimate goal or objective. Defining the goals helps one relate the study more pertinently to his own purposes. The first step in the study of educational psychology, accordingly, might well be a preliminary and cursory examination of the nature and ramifications of the field.

Psychology is the study of behavior, of the organism's attempt to carry on a continuous process of adjusting. There are many branches and subdivisions of psychology. Each branch is devoted to the study of some particular class of problems related to adjusting. Educational psychology is a branch of psychology which deals with the problems of teaching pupils to profit from the assistance of those more experienced in carrying on adjustive processes in academic realms, in social activities, and in personal self-realization.

The major problems of educational psychology have to do with (1) the nature of the individual, (2) the material to be learned, (3) the economy of learning, and (4) the establishment of psychological principles of education. The learnings which we hope to facilitate as teachers include all those things which are considered the objectives of education: communication, health, citizenship, sociability, use of leisure time, mental and moral health, family relationships, and vocational efficiency.

Data for the solution of the many problems raised by the concerns and purposes of educational psychology are achieved by (1) practical experience, (2) controlled observation, and (3) experimentation. These procedures help us to derive generalizations that are helpful in solving the particular and specific problems of individual pupils whom we meet in the classroom. The extent to which you receive help on such problems depends on the degree to which the study of educational psychology makes a difference in your living, learning, and teaching.

PROBLEMS AND EXERCISES

1. Nearly all states require of prospective teachers a course in educational psychology. What justification is there for this requirement?
2. Ask some experienced grade school or high school teachers to name their most valuable professional course. Ask them what steps they would advise you to take to make educational psychology most valuable.
3. For each of the "aims in terms of outcomes" list things that might be done to make the outcome an actual achievement for yourself.
4. How far should the data of educational psychology go in determining the aims of education?
5. Cite some examples from your own school experience which seem to indicate a lack of knowledge of psychology on the part of the teacher. Cite some instances which were indicative of functional knowledge of educational psychology on the part of the teacher.
6. What are the implications of the statement "Where there is no learning, there is no teaching"?

SUGGESTED ADDITIONAL READINGS

Blair, Glenn M., "Educational Psychology: Its Development and Present Status," *Bureau of Research and Service Bulletin,* University of Illinois, Vol. 46, No. 13, 1948.

This booklet is the result of a study of what courses in educational psychology are and have been, what experts think they should be, and what the next steps are likely to be.

Burton, William H., *The Guidance of Learning Activities,* New York: Appleton-Century-Crofts, Inc., 1944, Part I, pp. 5–241.

The author describes what he considers the fundamental psychological bases of learning. His list of misconceptions of learning is exceedingly pertinent. The material is sound and thought-provoking—it is highly recommended.

Gray, J. Stanley, *Psychology in Human Affairs,* New York: McGraw-Hill Book Company, Inc., 1946.

Dr. Gray, with the assistance of several contributors, has described the role of psychology in several areas, such as college adjustment, teaching, mental illness, crime, art, industry, business, military life, and the like.

AUDIO-VISUAL MATERIAL

Make Your Own Decisions, Coronet Films, Inc., 65 East South Water, Chicago 1. (11 min, BW, sd.)

Presents the importance of being able to make one's own decisions. Gives a series of five questions illustrating the alternatives that exist in various situations. Shows how each contributes to making self-reliant and mature persons.

2

PSYCHOLOGICAL BASES OF EFFECTIVE STUDY

ALL COLLEGE STUDENTS face the problem of learning how to study more effectively. Some may have once learned the techniques, but it is probable that even they need to be reminded of study habits that have been neglected. A view of psychology in terms of efficient study will have the following advantages: (1) it will help the student appreciate the value of theory, (2) it will give him a chance to apply what he learned, (3) it will relate educational psychology to individual needs, (4) it will suggest some practices that will be helpful in one's teaching career, and (5) it will provide a preview of the entire course.

There is no magic key by which study can become suddenly and markedly improved. But there is no doubt that study habits can be improved step by step. A little improvement can result in a huge *cumulative* saving of time and effort. Study involves three factors—habits, capacity, and personal adjustment. Of the three, study habits are the easiest to improve and will therefore make an effective approach to the understanding and application of educational psychology (273).

THE ROLE AND IMPLICATIONS OF PURPOSE

Behavior Is Goal-seeking in Nature (a Principle). All behavior stems from a state of disequilibrium or upset within the organism. There follows from this upset an effort on the part of the organism to regain balance or repose. The disequilibrium is called by many names, such as need, want, wish, drive, hunger, thirst, and the like. Thus, it is said that all behavior is teleological—it is directed toward an end or a goal.

When behavior is caused by tensions the nature of which are not known to the organism, the action is called *purposive*. That is, the organism attempts to secure or maintain balance or remove vague discomfort without realizing exactly what the tension is. Thus, a baby may cry because he is wet or hungry or wants to have his position changed, but he may not have analyzed his exact need. A man may be cross because he is

hungry, but because it is not mealtime he may not understand the cause of his tension. The expression of his irritability is purposive.

On the other hand, if the source of the tension is analyzed, when the need or want is conscious, it is said that the resultant behavior is *purposeful*. The individual perceives more or less clearly what the goal of his behavior is or should be. It is highly advantageous that one's cravings or wishes be made conscious, because activity is more effective when goals are clearly defined. The teacher who understands, appreciates, and applies his knowledge of the fact that behavior is caused has an advantage. Such a teacher will not attribute the misconduct of a pupil to innate "orneriness" or "bull-headedness" but will seek the cause. When he learns the cause he will have a basis for understanding the child and will be better able to transform the child's purposive behavior into purposeful action.

Define Your Purposes (*Applying Theory*). A great majority of students are studying educational psychology because it is a required course. Why is the course so widely required and so frequently recommended? Certainly not to provide "busy work." It is because teachers have found that the course has been highly valuable to them in solving some of the problems they encounter in teaching (254). You might well begin by translating the purpose of educational psychology into your own purposes. Visualize yourself in charge of a group of thirty fifth-graders or teaching a freshman algebra class. What can be done in order to reduce some of the "first-of-the-year nervousness" that is commonly felt by both the inexperienced and the experienced teacher? You will want to know many things, but let us start with individual differences and their implication for the conduct of your class. You will want to know some of the characteristic interests of fifth-graders or of high school freshmen so that you can get their attention and cultivate their interest. You will want to know how the inattentiveness or discourteousness of Johnny Fifth Grade or Johnny Freshman can be transformed into constructive, goal-seeking behavior.

Now, before turning to the table of contents of your textbook to discover other useful knowledge and attitudes, you should look for something definite. What topics do *you* think should be studied in educational psychology? Check your preliminary suppositions with what you find in the printed book or the syllabus for the course. An important phase of determining the personal objectives you have for a course is to be sure that you understand the nature and purpose of any assignments that are made.

While it is true that learnings are specific it is also true that they have "transfer value" (see Glossary). The courses you take should suggest methods, principles, and generalizations that will transfer to professional situations. These will be most productive when there is a continuous search for the opportunity to transfer knowledge and skills from one sit-

uation to another. You should now transfer as many of these suggestions as possible from the study of educational psychology to the other courses you are pursuing.

The suggestion that, for effective study, purposes be clearly defined—that goals be stated precisely—is in line with the fundamental fact that behavior is goal-seeking in nature. That goal, to be most advantageous, should be purposeful rather than purposive. As a teacher you will be responsible for making similar reasons clear to your students—whether you teach first-graders or a course in trigonometry.

Behavior Is Motivated (a Principle). Lack of equilibrium in the individual may be due to inner factors (sex drives, desire for rest, desire for action) or external factors (a command, a change in temperature), but the two are inextricably interwoven. Thus, paying attention to a lecturer may be due to his charm and intelligence but also to the fact that the student is in a comfortable position and has previously had a good night's sleep.

The teacher's problem of motivation is to secure a desire on the part of the pupil for a particular kind of activity where previously there was little or no desire for that activity. Often this may mean making the desired activity more attractive than the activity in which the pupil is presently engaged. A pupil motivated to throw spitballs can also be motivated to learn to spell "mother" or to write an oration.

Knowledge is born of desire. The desire may be very indirect and vague (purposive), as in the case of a child who learns to walk because his muscles require exercise or because his sense of balance is maturing. The desire may be extremely purposeful, as in the case of a lawyer who reads precedents on a certain type of decision. But if knowledge is to be acquired at an optimum pace, the desire must be understood and be strong—this is called interest. The word itself indicates the nature of interest—*inter*, meaning "between," and *esse*, "to be." Interest is that feeling or attitude which the person has toward an object, situation, thing, or person which creates "oneness," or identification. It arouses and maintains activity toward a particular goal.

Interest has numberless manifestations and causes. But in spite of its complexity it is understandable and capable of being manipulated and controlled. Thus, the student of educational psychology does well to realize that interest is a personal matter and that he should take such steps as relating the new to the known, acquiring information, being successful, using knowledge, and being active in the learning process. These same steps will be found useful in setting up the conditions which tend to generate interest when one is teaching in the first grade or in high school. To the extent that interest is created and fostered educational activity becomes a joy and a privilege (72).

applied to teaching-learning situations. Try to remember and be able to relate some of the experiments from which generalizations are derived.

Interest is not a discovery; *it is an achievement* (289, p. 159). It is possible that you can be entertained by the enthusiasm of your instructor. You will find it easy to give attention because of the clarity of his explanations or the amusing incidents which he relates, but enduring interest which will sustain you in continued effort must come as the result of your own application. It is not easy to work consistently, because growth is a slow process. The sooner you give up the idea that you can acquire interest by some such facile process as hypnotism or autosuggestion the sooner you can undertake the arduous endeavor of acquiring information.

4. Arrange for success. Closely akin to, in fact part of, the process of acquiring information is arranging for success. As information is acquired it will be possible to recite intelligently and to gain prestige in the eyes of fellow students. You will be able to corroborate, or challenge, the views that are presented in class, and because you are informed these contributions will receive attention. Even apart from these tangible advantages there is the inner satisfaction of knowing that you have taken a step toward the goals which are your own.

Success can go further than your being able to recite admirably. As you prepare adequate recitations you are also paving the road to the writing of more satisfactory examinations. Unfortunately, too many students view the examination as the sole criterion of success; consequently they study largely to get a good score. It must be remembered that in terms both of your inner satisfaction and of your later professional competence the examination is only an indication—not a measure. A test plays an important function in the stimulation of progress, but it should not become the end and aim of any course. Maintaining daily successes over periodic assignments will make it more likely that success in the form of creditable examination papers will result.

Interest in any course will be enhanced to the degree to which you succeed in discovering applications which can be utilized in living, learning, and teaching. One teacher-candidate of mediocre mental ability, who never complained of an uninteresting course, used a dual system of notes. She kept one set of notes which were to be used in passing each of her courses and another set to guide her in her future teaching. The second set of notes contained lists of ideas which she was going to try when she became a teacher and a list of techniques that she was going to avoid using. She was minimally successful in an academic sense—she barely managed to pass most of her courses. She was maximally successful in the second area. Within five years of her graduation she was holding one of the most important positions in the state in her particular field. She had

surpassed the success of many more able students who had their eyes only on the short-term goals.

5. Utilize concrete sensory materials. Words are only symbols, indicators of something, and as such are abstractions that often have different meanings for various persons. It is more difficult to comprehend and understand the abstract than it is the concrete and specific. Hence, the more you do to bolster the meaning of the words by seeing, feeling, touching, and tasting the more lasting is the impression made.

The study of educational psychology can be made more concrete by seeing motion pictures illustrating teaching-learning situations. Since the student is not able to choose these freely, another, and more valuable, device for making the subject concrete is to observe and participate in classroom teaching situations. Often these observations are recommended and even required. If observation is not required it is possible to find teachers and principals who will readily consent to such visits.

Many students have a chance to consolidate their knowledge of educational psychology by acting as tutors for classmates. Teachers in the public schools may leave calls with the dean of the school of education or psychology for students who are willing and able to act as tutors. Tutoring will do much to clarify a subject that is otherwise often difficult to comprehend. A real appreciation of individual differences, for instance, is not obtained until one sees and works with them in the classroom.

Similar attempts to make learnings concrete should be made in other courses. Visits to institutions, factories, farms, sewage-disposal plants, water-supply systems, and department stores have applications in various courses. Museums, displays, collections, and replicas provide other means of making learnings concrete. The instructor often advises making such visits, but only a few students follow the advice.

6. Participate in class activities. It takes a very stimulating lecture to equal in interest a conversation in which we are active participants. Recently one of the author's students wrote a note regarding a class in "Adolescence" saying, "This was the best session yet." There had been almost no lecturing and a great deal of discussion regarding educational opportunities for youth. Time seems to pass more quickly when we have something to do than when we are unoccupied. It is more interesting to watch people in a crowded waiting room than it is to be the sole occupant when we are waiting for a train or bus. The person who is bored in class is the one who merely waits for the bell to ring. The student who says the class is interesting is the one who asks a question now and then, challenges a viewpoint, or in some way makes a contribution (254). Participation can also be less overt; that is, one can react mentally to what

takes place. He can take notes, he can shake or nod his head to show that he is not in some sort of passive state.

Full and vigorous activity that tends to generate interest may take the form of supplementary outside work. Writing special reports and term papers, answering the questions on the syllabus, preparing book reports, and checking some of the references cited are all ways of active participation.

7. Make use of what is learned. Interest will be enhanced by seeking ways to apply what is learned. The more immediate the application the better. The study of Spanish is more interesting if a trip to Mexico is contemplated in the near future than if it is studied merely to fulfill a language requirement before graduation. Reading a book on golf is more stimulating if we are going to try some of the ideas tomorrow than if we thought that sometime within the next few years we might decide to buy some golf clubs. Most of you will recall that part of the fun of studying Latin or French was to talk a little to your classmates in the language you were studying.

The matter of motivation is one of the most important problems you will have either as a student or as a teacher. Knowledge, if it is to be anything more than incidental or fortuitous, must be born of desire. The seven suggestions above are ways of fanning the sparks of interest into a steady flame.

Mental Set and Study (Psychological Theory). Mental set means preparation for a particular kind of mental activity to the exclusion (or at least partial exclusion) of alternative or competing activities. It is a predisposition to act in a certain way. Thus, when one is hunting rabbits his readiness to see rabbits may cause him to mistake clods of dirt, rocks or stumps for the game he is seeking. An experiment in mental set has indicated that reaction is more rapid when the set is specific. In this experiment subjects were told to release a key when a stimulus of either sound or light was presented. Their reactions were faster when light was presented when they expected light and when sound was presented when they expected sound than when sound was presented when they expected light (196). Mental set prepares the individual for perception and also plays a selective role.

There are many conditions which foster mental set. The physiological condition of the organism is one, *i.e.*, whether one is tired or rested, ill or well, hungry, thirsty, warm or cold, and the like. The external environment plays a part—one does not feel like studying during the intermission period at a concert hall, whereas he is inclined to study in the library. The habits one has formed help to establish set—one may feel uncomfortable after dinner until he has had his pipe or cigarette. Antecedent condi-

tions are significant; one is not likely to go to sleep quickly after witnessing an accident or after losing heavily at a card game.

The significance of mental set in effective study is stressed in several of the recommended procedures. Having one's material readily at hand is conducive to concentration. If study has to be interrupted by going to another room to find a reference book, getting up to sharpen a pencil, seeking ink to fill a pen, or going to the kitchen for a drink, concentration becomes more difficult. The attitude one takes toward the work is also important. One does not have the proper mental set if he feels that he is doing the lesson "for the instructor" or if he feels the course merely represents the whim of the faculty council. An enduring and genuine interest, in terms of long-term goals, will help to establish the temporary set that enables one to get started readily and to accept the task as being of personal significance. A schedule providing for both time and place habits is most effective in establishing mental set. One's room can be used for study most advantageously when one is not accustomed to using it also for visiting. It follows that one should not spend part of his time visiting in the library if he wishes to foster the study attitude when he goes to the library.

Previewing the material or preliminary scanning of the chapter to be read is a means of establishing mental set. The preview causes one to look for certain things. He is thus inclined to perceive more readily the things which are most pertinent to the objective. Looking for confirmation or repudiation of one's ideas is conducive to favorable mental set.

Mental Set and Physical Conditions for Study (Applying Theory). Many books and pamphlets which deal with effective study habits emphasize the need for proper lighting, proper temperature, controlled humidity, a good desk and a straight chair, and quietness. There can be no doubt that these are desirable physical characteristics of the study atmosphere. They should be sought *to a degree.* But it must be stressed emphatically that good study may be accomplished when these conditions are unobtainable. One must therefore guard against the negative mental set leading to the belief that these physical factors are essential. The good student will find that he often must study where the lighting leaves something to be desired. During the summer it may be impossible to find a cool room in which to carry on academic pursuits. Many times the library or your room is noisy with the passing of people, the whispering and laughing of students, the hum of machinery, the hissing of a radiator, or the blare of a radio in an adjoining room. You should learn that study can, and frequently must, be pursued in spite of these noises. You should not be too gravely concerned with the physical conditions of learning. Since it is not possible always to have perfect heat, light, and

humidity, then it is important to acquire the mental set that study can be and must be done under less than optimum conditions.

Students who commute have discovered that they can study on the bus or train. Others have learned that the few minutes they spend waiting for a bus or for an appointment can be used for review or for the study of vocabulary items. One cannot afford to wait until he can find ideal study conditions—though he should seek to eliminate as many negative or distracting features as possible. Obviously, one cannot write a theme in odd moments, but he can jot down some points for his outline. *The attitudes one holds toward his work and his ability to work are as important as are the actual physical working conditions.*

One physical condition can and should be controlled in one's study room: all necessary materials should be on hand at the beginning of the study period. The need for a textbook is obvious. Other helpful items may include a syllabus, a pencil for checking words while reading, and cards and paper for taking *important* notes. See that your notebook is ready, paper is available, your pen is filled, and an eraser is available. The dictionary and thesaurus should also be at hand.

The Time Schedule (Applying Theory). It is easier to get work done effectively and economically if there is a definite plan for the expenditure of time. William H. Burnham, one of the early and prominent proponents of mental hygiene, has stated that the essential prerequisites of mental health are a task, a plan, and freedom to carry out the plan (42, p. 476). You may have selected your goal: completion of college and professional courses. You now need to formulate a plan. This plan should be more detailed than a mere listing of courses that you will need by the time you are certified. It should provide a working basis for the expenditure of time from day to day and from week to week. It is worth noting that the formulation of such a plan will, in effect, help to provide the freedom for executing the plan because it will serve to reduce the number of distracting interruptions—it favors positive mental set.

The time schedule should include all the activities that occupy your time. It should be as definite as possible yet allow for interruptions that cannot be anticipated. Thus, the essential parts might well include (1) class and laboratory sessions, (2) study hours, (3) free-study hours, (4) an adequate amount of sleep, (5) work and miscellaneous duties, (6) time for meals, (7) personal responsibilities, and (8) free time and recreation. The attitude you take toward the time schedule is important. It will not work automatically—*it must be made to work,* as a dependable guide if not a prescription, for the use of every minute. The schedule should not be adhered to dogmatically, but deviations from it should be weighed carefully.

1. Class and laboratory sessions. Charting classes on the schedule will provide the backbone of the plan. Block off the hours of the day for each day of the week and enter these items first. Make the chart on a sheet of paper that will fit in your notebook so that you can have it with you at all times. This is especially necessary in the initial stages of making the schedule work for you.

2. Study hours. Two hours of study for each hour in class are widely recommended. Few students spend more than this amount and most fall short, but it is well to allow for this amount. *Do not* merely write the word "study" on your schedule; state specifically what you are going to study at what hour and *indicate the place where the study is to be pursued.*

3. Free-study hours. Free-study hours are provided to take up the slack in assignments which for some reason cannot be done in the hours regularly scheduled. This might include preparing for a test on short notice, writing a paper of unusual difficulty, doing extra assignments on collateral references, or preparing a special oral report. For instance, on the sample time schedule (Fig. 1) Thursday from 8 to 12 A.M. shows two hours' study for educational psychology followed by two hours' study for history. Even though you have not finished your study for educational psychology by 10 P.M., go on to the study of history, as scheduled, and use a later free-study period to finish the work in educational psychology. You might feel that another fifteen minutes would see the work completed, but leave it nevertheless. If you do not, there will be a tendency to hurry; and hurry is not compatible with good scholarship. If you finish the work without pressure you may feel encouraged to study some facet of the work that would otherwise be forever neglected.

4. Adequate amount of sleep. No statement can be made about the adequate amount of sleep for everyone. It would be well for you to assume that you are average and need approximately eight hours to maintain mental vigor and bodily health.

5. Work and miscellaneous duties. This item covers work you do for compensation and also those other necessary duties, such as washing and pressing clothes, shining shoes, sewing, and cleaning one's room.

6. Time for meals. If you want to enjoy college and get the maximum benefit from it you must give careful attention to physical needs. Provide plenty of time for leisurely meals; and, incidentally, you should eat in enjoyable company. Try to avoid grabbing a doughnut and a cup of coffee for breakfast before hurrying to class. Spurn the temptation to eat a hamburger and a milkshake when you could take a few more minutes and get a balanced lunch at the dormitory or chapter house.

7. Personal responsibilities. This entry includes letter writing, personal care, bed making, house duties for which you are responsible, and repair of clothing—thus there is an overlap with item 5.

8. Free time and recreation. This is an important item because profitable college work includes having fun. You will have a better mental set

Time	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
7-8 A.M.	Sleep	Toilet Breakfast	Toilet Breakfast	Toilet Breakfast	Toilet Breakfast	Toilet Breakfast	Sleep
8-9	Sleep	Ed Psych. Class	Study, Room, Ed Psych.	Ed Psych. Class	Study, Room Ed. Psych.	Ed. Psych. Class	Toilet Breakfast
9-10	Toilet Breakfast	Study, Lib., Ed. Psych.	Free, Room Study	Study, Lib., Ed. Psych.	Study, Room Ed. Psych.	Study, Lib., Ed. Psych.	Work
10-11	Letters	History Class	Study, Room, History	History Class	Study, Lib., History	History Class	Work
11-12	Church	Study, Lib., History	Chorus	Study, Lib., History	Study, Lib., History	Study, Lib., History	Work
12-1 P.M.	Visit	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
1-2	Dinner	Chemistry Lecture	Chemistry Lab.	Chemistry Lecture	Chemistry Lab.	Chemistry Lecture	Work
2-3	Free Study	Literature Class	Chemistry Lab.	Literature Class	Chemistry Lab.	Literature Class	Work
3-4	Free Study	Study, Lit., Room	Chemistry Lab.	Study, Lit., Library	Chemistry Lab.	Study Lit.	Work
4-5	Recreation	Free	P.E.	Free	P.E.	Free	Visit
5-6	Recreation	Free	Free	Free	Free	Free	Free
6-7	Lunch	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner
7-8	Youth Group	Study, Lit., Room	Free	Study Lit.	Study Lit.	Free	Free
8-9	Date	Free, Room Study	Free	Date	Free Study	Date	Date
9-10	Date	Free, Room Study	Washing Pressing	Date	Washing Pressing	Date	Date
10-11	Plan for Week	Free, Room Reading	Free, Room Reading	Free, Room Reading	Free, Room Reading	Date	Date
11-7	Sleep	Sleep	Sleep	Sleep	Sleep	Sleep	Sleep

FIG. 1. Illustrative time schedule.

for the routine of study and class if you systematically provide for doing the things you want to do. You have earned the right to have dates, engage in "bull sessions," go skiing, and play tennis if you have successfully followed the rest of the time schedule. In fact, as a prospective teacher, you will find that *these leisure-time activities are an essential part of making you the well-rounded person with a variety of interests who is an effective leader of young people.*

Making the time schedule will not solve all academic problems. It is merely the first step. Though the first plan that is made may not work with entire satisfaction, do not put it aside immediately. Do the best you can with it for three weeks and then, if necessary, alter it. Do not alter it at the end of one week. The schedule is only a guide, but take care that it is not less than a guide.

HABIT FORMATION AND STUDY TECHNIQUES

Nature and Advantages of Habits (Psychological Theory). Habits are more or less routine ways of acting or responding. The expression "more or less" is used because even repeated actions are not carried out in an identical manner. The performance of a habitual act changes the organism to some degree. Not only are habits ways of acting, but, perhaps even more important, they constitute a form of motive. Either as motive or activity, habits are of an automatic nature; that is, they require no conscious premeditation. Finally, it should be noted that habits are learned modes of response, in contrast to behavior that is the result of glandular or physiological functioning or maturation.

While it must be recognized that there are disadvantageous habits, it is still true that habits are an economical way of adjusting to routine requirements of daily living. If one had to learn anew each day how to tie his shoes, how to button his shirt, how to use a spoon, where to find the coffee, and what route to take to work or school, so much time would be consumed that there would be no time left for more productive activity. Child psychologists emphasize the importance of the early years of life because of the relative permanence of habits. For example, sociologists make it clear that if a child or youth has made good social adjustments in the first decade or two the habits he has formed will make it unlikely, if not impossible, that he will become a delinquent (26). Care should be taken to prevent the aimless establishment of habits that will be handicaps later.

The importance of good habits was seen in the suggestions for study when it was said that one should study a certain thing at a certain time in a certain place. Since habits are not formed in a day, it was suggested that one should *make* his time schedule work in the first few days—not permitting himself to say, "I'll begin tomorrow," or "This one doesn't work—I'll have to make another."

Students should develop those attitudes toward their work, their courses, their instructors, and their future that will be most productive. This means striving to develop an appreciation of the value of each course and a confidence in the merits of an instructor. It means attempting to predict the value of present work in terms of future professional competence.

Teachers and students need to realize and act upon the facts that men are creatures of habit, that habits are formed by repeated responses, and that some habits are more advantageous than others. Productive behaviors that are systematized into habits not only make work easier but add the strength of motivation to worthwhile objectives that might otherwise be more difficult to pursue.

Improve Reading Habits (Applying Theory). A large portion of study time in college is spent in reading. The relation between reading skill and academic success is high. Unless the college student has had specific instruction in the development of reading skills in high school or college, it is safe to say that an investment of time in *practicing reading skills now cannot be neglected.* A few minutes devoted to reading practice every day for a two- to four-week period will pay higher dividends than any other activity. Improved reading skills will result in savings in time, effort, and money.

The typical college sophomore reads an average of about 180 to 230 words of nontechnical material per minute. This rate can be, and often has been, doubled in three weeks of practice devoted to improving reading skills. One recent study reported a gain from 213 to 350 words a minute in a twelve-week practice period, and most of the gains were still present six months later (13). It can readily be seen that such practice will reduce the time necessary for completing a reading assignment; or it may result in covering much more material (for example, collateral references) in the same unit of time. Moreover, it is safe to say that more rapid reading increases comprehension. Contrary to popular belief, in some kinds of reading one comprehends more of what is read rapidly than of what is read relatively slowly (53, pp. 265f.).

Reading is sometimes defined as getting meaning from the printed page. It is also pertinent to define reading as *bringing* meaning to the printed page. This latter definition implies that what is read is weighed against previous experiences, both personal and second-hand.

1. Practice on easy, interesting materials. As you pursue routine study it is necessary that you utilize the old habits to which you are accustomed. Do *not* try the following suggestions on your class assignments. Choose an interesting novel, a mystery story, short articles in nontechnical magazines—anything that you would ordinarily read for pleasure and for which you will not be held responsible. You are now attempting to change habits, and you will feel uncomfortable at first. Transfer of skills from easy, interesting material to academic matter will come later as the result of improved skills and maturation.

2. Practice regularly for short periods. A few minutes of practice daily will be more profitable than one or two hours during a week end. Ten minutes twice a day, or even once a day, will result in perceptible

gains in a week. It is uncomfortable to eliminate old, established habits, and this uncomfortable feeling cannot be endured for long. If you were to persist in spite of a negative attitude you might become disgusted with the practice or even with reading itself.

3. Read for more speed. There will be many objectives for practice in reading, and several of them are combined in the matter of reading for greater speed. Comprehension is of course most important. But in general, the faster one reads the more he comprehends. This is not only proved by experimentation but it is logical. One reads for ideas, and ideas are contained in groups of words—not in single words. If words are grouped, as is the case in rapid reading, the idea is more apparent. If one is reading rapidly, attention will probably not wander off to extraneous matters, as is often the case in more leisurely reading. Rapid reading means that more ideas are covered per unit of time, and it is therefore easier to make the associations that increase comprehension and retention.

4. Read under a handicap. One means of increasing speed is to read under a handicap of time or amount. That is, read for four or five minutes at your ordinary pace. Then count the words you have read. Next count off this number of words and add fifty more words (your handicap) and mark the spot in your book or article. Then try to read to the mark in the same period of time. Or count off the number of words you have read in your trial period, mark off the same number of words in new material, and try to cover the material in thirty seconds' less time. As your speed increases keep increasing the handicap by fifty words or thirty seconds.

5. Read for ideas at all times. When you are reading under a handicap it is important to remember that the main thing is gaining information and ideas (293, p. 159). Two practices will help: (*a*) Anticipate meanings. Scan the material first and guess what the writer is going to say. It makes no difference whether or not your guess is correct. You can seek either verification or contradiction of your guesses, but the main thing is that you are an active rather than a passive reader. (*b*) After you have read a page or two, stop a few seconds and try to remember what you have read. Close your eyes and see if you can actively "recall" (see Glossary) some of the ideas.

6. Improve vocabulary. Words and combinations of words carry the ideas for which you are reading. It is essential that you know the precise meanings. The writers whose works you are reading chose their words with specific meanings in mind. If you know these words only vaguely or not at all you will miss the idea they convey. Moreover, if there are too many words which you do not understand, the smooth rhythmical eye movements which are characteristic of rapid and effective reading are interrupted. A strange word constitutes a hurdle which the eye can-

not take in stride. Do *not* stop your reading practice to look up the word, but check it lightly with a pencil and after the exercise study the word so that it will not trip you a second time.

7. Try to avoid regressive eye movements. Regressive eye movements are symptoms of poor reading, *not* causes, and it is necessary to determine the causes of poor reading so that improvement may take place. However, some regressive eye movements are simply a matter of habit. This habit may be checked by closing your eyes when you feel a regression coming. You will discover that the ideas come to you—in short, there is a gap between seeing the words and perceiving the meanings. Most frequently the regression is not needed. Regressive eye movements will decrease when you read more rapidly and with increased comprehension.

8. Do not permit your eyes to "fixate" (stop to see) at the end of a line. Rapid readers try to cultivate the ability to focus on the center of the page and read down. However, fixations, like regressions, are symptoms, and when good reading habits are established there will be fewer fixations per line. If too much attention is given to fixations and regressions it will be difficult to attend to what is most needed—getting ideas.

9. Do not vocalize. "Vocalization," in connection with reading habits, means the tendency to speak aloud or subvocally the material that is being read. Students whose lips move or who seem to whisper to themselves as they read are vocalizing. This tendency must be avoided because it tends to slow reading to the same rate as speaking, which is only slightly over 100 words per minute.

10. Keep a record of progress. It will be a source of motivation to you if you know you are making progress in reading skill. A chart of progress can serve as a check list of good habits and a measure of accomplishment. Measure your speed on some specific material and record your rate. An average of three or four trials will be a good measure. Then put that on a chart such as the one shown in Fig. 2. Speed is not the only factor in reading. One should vary his rate according to the purpose and nature of the reading material. Obviously, one cannot get any emotional feeling from poetry if he reads it rapidly, skipping words and phrases whose content is obvious. Nor can one read rapidly when the material is technical and the vocabulary is largely strange and highly specific. It would be most unwise to practice rapid reading while studying for your first course in biology. An advanced major in biology might be able to read in his field with rapidity and comprehension, but not the tyro. Nor would rapidity be advisable in reading step-by-step instructions for setting up the equipment for a chemistry or physics experiment.

There are times, too, when easy material should be read slowly. The ideas, though simply expressed, may be worthy of immediate reflection

and evaluation. (It is to be hoped that some of you will read this material slowly and reflectively and evaluate it in terms of what you might do to improve your working efficiency.) Some prose selections are poetic

Words per minute	1st 3 day period	Second period	Third period	Fourth period	Fifth period	Sixth period	Seventh period	Eighth period
500								
475								
450								
425								
400								
375								
350								
325								
300								
275								
250								
225								
200								
175								

Item	Habit check list*							
Study vocabulary								
Avoid regressions								
Anticipate meanings								
Use active recall								
Practice daily								
Avoid vocalization								
Read varied material								

*Enter "Yes" or "No" in the appropriate box.

FIG. 2. Reading progress chart. Try to make the chart line go up. Get more "Yes" responses in the boxes.

in the sense of being expressive of beauty. Thus, one might want to go slowly enough to visualize the description of a sunset or the winter's first snowfall. Even with these exceptions there is much material that can be read comprehendingly at a fast pace. When you are reading in a familiar area you will have encountered some of the ideas previously. Explanations of key ideas are sometimes obvious—these you can speed over rapidly.

Another suggestion that can be immediately employed in all your reading is to cease taking notes until you have finished the entire article or chapter. Such interruptions, regularly practiced, tend to slow one's reading rate so that some students become poorer readers as they progress through college. Aside from this handicap, one does not know what materials in the chapter are important enough for notes until the entire selection has been read. But the big factor in condemnation of immediate note taking is that it interferes with the grasping of entire ideas and with the rhythm which characterizes good reading. Underlining will also tend to slow your pace. If you own the book and want to mark some important idea it might be better to draw a vertical line in the margin than to try to underline.

Finally, be satisfied with slow progress. Do not expect to make spectacular gains after the first few practice periods. The fact that you read more in college than you have previously does not necessarily mean that your reading skills will improve. Merely reading more may only result in the further consolidation of habits which have been previously established. Intellectual and educational growth and *practice directed toward specific objectives* are fundamental to improvement.

PERSONAL INVOLVEMENT IN LEARNING

Learning Is an Active Process (Theory). Repetition, use, or practice are universally accepted as avenues of learning. Learning, in its broadest sense, may be considered as an active process of adaptation (155). Many of the recommendations for effective study are based upon this fundamental fact. We have said reading is a matter of *bringing* meaning to the printed page. The student should react to what he reads. He should look for ideas. He should listen actively, and weigh what is said, and at least silently accept or repudiate it. Class participation in the form of recitation, giving reports, or experimentation in the laboratory are other ways of being active in the learning process. The need for reflection should be strongly emphasized because of its wide neglect—reflection upon what has been read, what has gone on in class, what has been experienced in the remote and the immediate past.

There has been a steady and marked decrease in the number of "straight lecture" classes in college in recent years. Moreover, the high school method now in greatest favor involves more active student participation in class affairs instead of mere recitation. Elementary schools have for a long time emphasized student activity to a degree, but there seems to be a trend toward even greater pupil activity as teachers and parents appreciate the educational value thereof.

Retention is stimulated by materials which have personal meaning. Many experiments, repeated with minor variations, point consistently to

the conclusion that meaningful materials are learned more rapidly and retained for longer periods than are materials which are isolated or not understood. For example, in the study of biology, fifteen months after the course, ability to name animal structure and identify terms was largely lost. Ability to apply principles and interpret materials actually improved (276). If one were to set out to learn the parts of the body or of an automobile or to memorize a poem, it would pay to spend time first gaining an understanding of the use, function, and purpose of the thing to be learned. Theory and principles are of vital importance.

Meaning always has reference to the individual, and it is derived from his own experiences. The pupil must touch, feel, taste, see, hear, and manipulate objects in his environment in order to understand them. As he shifts from the world of objects to the realm of words, which represent objects and situations, he must make the transition in progressive steps. Meanings, to a great extent, actually constitute the environment of the individual—especially his psychological environment. The economic system under which we live may have a great effect on the welfare of an infant, but only indirectly does it have any bearing on his psychological environment.

Development of Language (*Applying Theory*). From the time the growing child reaches the age when language begins to develop, and increasingly thereafter, words become an ever more important factor in psychological environment. Words symbolize ideas, relationships, problems, materials, and processes. Although words are abstractions, there should be no doubt that they form the basis for real experiences. Words constitute an avenue toward acquiring vicarious (indirect) experience and thus provide an opportunity for valuable economy in the process of learning and adaptation. But generalizations hold only when the meanings attached to the words are commonly shared by other members of the individual's group. Even the meaningless jabberings of a child enable him, to a limited degree, to control his environment by gaining the approval of his parents. As his language skills grow his control is improved and broadened. Language is of great psychological importance to the child because it enables him to learn from others and also to influence their actions toward him. Moreover, language is involved in his thought processes as he recalls, describes, and reasons (198, p. 67). Some of these functions can be observed, by listening in as a young child plays by himself. The play is paralleled by a flow of words which tell what he is doing. In much the same way, the adult improves his control of materials, persons, and ideas as his vocabulary grows.

Many linguists, semanticists, and psychologists have asserted that language makes man's complicated life possible. Writing and printing have played a large part in establishing our religious, economic, and moral con-

victions. Our acquisition of physical necessities as well as the enjoyment of aesthetic pleasures is dependent on language. The opportunity which communication provides may be summarized by saying that (1) it makes cooperation possible, (2) it provides for the pooling of knowledge, and (3) it extends the boundaries of our psychological world (121, pp. 15f.).

The significance of meaning and of language in the learning process forms the basis for several of the recommendations given for effective study (see the steps for developing interest, pages 20 to 23). Emphasis upon meaning is important to the student, but it is no less important to

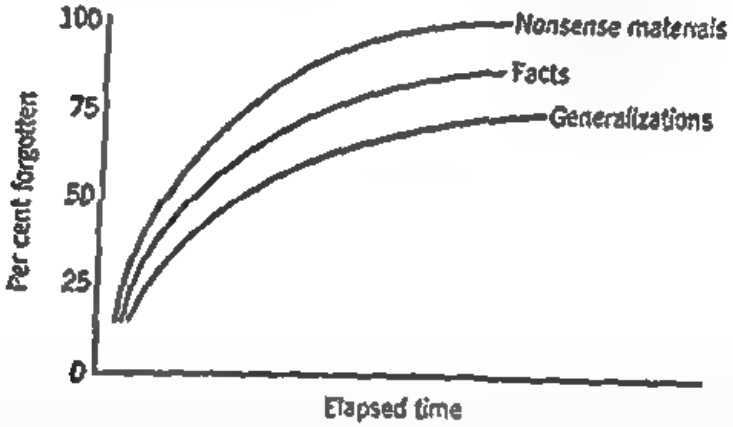

FIG. 3. Curves of forgetting. The shape of the curve in relation to elapsed time must be considered representative. Variations in thoroughness of learning, completeness of understanding, personal need, and the like would make substantial differences in the shape of the curve.

the teacher. Your own present emphasis on meaning will enable you to see more clearly the many avenues for helping pupils derive meaning from their school work. It will assist in overcoming the criticism that is so often made of schoolwork—that it has too little significance in terms of the pupil's out-of-school life. Teachers must emphasize the growth of vocabulary, but they must be sure that meanings are clear—that learnings are more than rote memory or mere verbalization.

Learning and Forgetting (Theory). An older and persistent problem of experimental psychology is that of forgetting. It has been consistently demonstrated that forgetting takes place more slowly if initial meanings are clear and hence understood. It has also been shown that most forgetting takes place immediately after the learning period (see Fig. 3). There are other factors besides the time element which influence forgetting; for instance, engaging in other learning activities results in more rapid forgetting than following a period of learning by sleep (140).

Other factors affecting the rate of forgetting include overlearning, that is, studying beyond the point of one successful repetition (163). For example, a student learning the definition of a word goes over it several

times after giving the definition correctly. The importance to the individual of what is learned is another factor bearing on retention. Here we again see the factor of purpose at work. Thus, if a friend in Chicago said he lived at 9747 Michigan Boulevard and you were in San Francisco at the time you might pay no attention to it and forget immediately. If, however, he said, "Come and see me tomorrow at 8392 Signal Hill," you would either jot it down or memorize it thoroughly at once.

The nature of the material also influences the rate of forgetting. Generalizations are forgotten less rapidly than are isolated facts, and facts are forgotten less rapidly than meaningless materials (33). These considerations are strong indications that teachers should teach for meaning and understanding. Since verbatim materials are more quickly forgotten, teachers will be working with natural processes when clarity of meaning, richness of associations, and frequency of application are stressed in the classroom. Yet we still find teachers who call for the exact wording of a rule of grammar or who criticize pupils because "that is not what the book says."

These data on the nature and course of memory add weight to some of the suggestions for effective study. Since forgetting takes place most rapidly in the earlier periods of time, it is advisable to review or complete study assignments immediately after class or to review what has just been read. It is necessary to establish and maintain strong purposes and to make all study as personal as possible (170). Periodic review aids memory. Spaced practice, such as is recommended in the section on improving reading skills, will slow the rate of forgetting. The improvement of reading skills will increase understanding and facilitate retention.

Many teachers hold periodic reviews to encourage retention. They discuss briefly the lesson for the previous class as an introduction to the current lesson in order to review as well as to tie the materials into larger "wholes." Periods of time spent in *meaningful* drill and review will pay great dividends.

Consistently Seek to Improve Vocabulary (*Applying Theory*). Experimental investigations have shown a closer relationship between scholarship (grade-point average) and vocabulary than between reading and scholarship or between general intelligence and scholarship (21). Of course, these are interdependent factors. The importance of vocabulary in effective reading has previously been emphasized. Tests of general intelligence usually contain a substantial section on vocabulary. It may be that, as a relatively mature individual, your test intelligence is fixed, but there can be no doubt that as a college student you have the potentiality for greatly increasing your vocabulary.

Vocabulary is significant in general efficiency, and it is also important in specific college subjects. If your vocabulary is suited to the courses

you are taking, you will understand the material, earn better grades on tests, comprehend the lectures, and remember what you read. Thus, it will pay to know precisely the technical vocabulary of biology, psychology, chemistry, and physics and the terms which have special meaning in the field of economics, sociology, and history.

Vocabulary development should begin with your present status. It is not necessary to go out of your way to find strange, long, or infrequently used words. For example, such familiar words as "phenomenon," "personality," "education," "psychology," and "exotic" are commonly misused. The important words, as far as your developmental program is concerned, are those which are familiar in terms of recurrence but unfamiliar in terms of exact definitions. Many of the words used in college courses will be strange to the beginner. These should be studied so that when they are encountered in later chapters and lectures they will have become a part of his working background.

No doubt your vocabulary will grow somewhat as the result of academic work. But that growth may be slow or negligible (88, p. 84). Improvement can be very rapid if conscious effort and adequate time are devoted to the task (19). It is suggested that you prepare word lists, look up and record the definitions, use the words in sentences, and review frequently. It is advisable to have in your notebook a separate vocabulary section—or several sections, if you wish to classify the words according to subject. Write the word, record the definitions, and below each definition use the word in a sentence. As the list grows, take a strip of cardboard, cut a section from one corner that will allow you to see the word but not the definition, and try to remember the definition. Try to use the word in a different sentence from that recorded in your notes (see Fig. 4). Keep reviewing the words you have listed until they have been well learned.

Another technique which many students have reported on favorably is to keep a set of 3- by 5-inch cards, one card for each word. The word is written near the top of the card, and the definition and the sentence using the word are written on the reverse side. Then look at the word and try to define it before turning the card. The advantage of the card system is that a few cards can be carried in a pocket or purse and reviewed in odd moments when waiting for an appointment or riding on a bus. As the words are mastered the cards are filed in a box and replaced by new cards. Occasionally the cards in the file box should be reviewed.

Closely akin to the importance of vocabulary improvement is the value of studying charts, diagrams, and tables appearing in the text or reference book. Too many students have a tendency to skip these items, especially if their meaning is not immediately apparent. Charts, diagrams, and for-

mulas are employed by authors because they condense and clarify descriptive material. Frequently more material is presented in a chart or

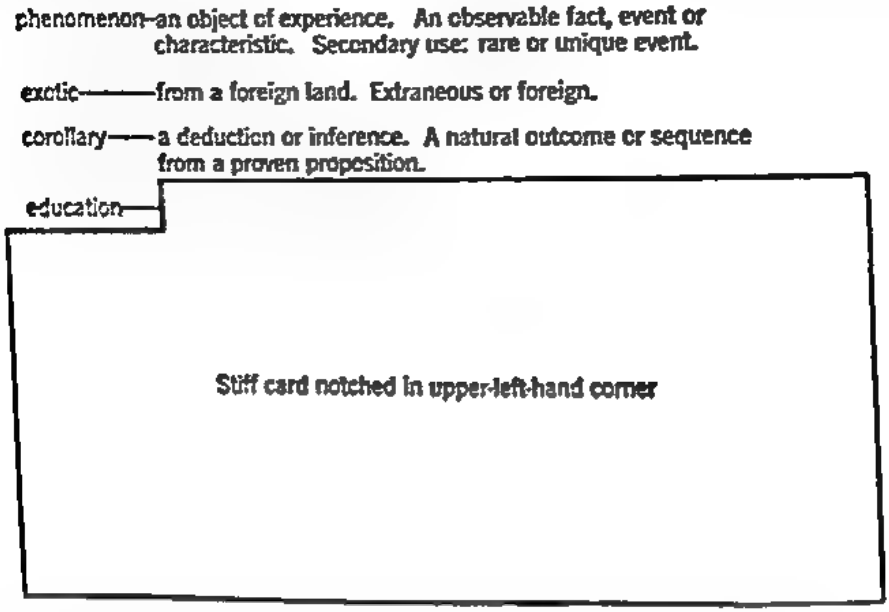

FIG. 4. Vocabulary list showing card used in active recall in word study. (Slide the card down the page enough to uncover the word, but hiding the definition. Try to recall the meaning before moving the card downward.)

diagram than could be cited in a verbal description occupying the same space; so it is a mistake to hasten over these media of communication.

Try to Grasp Relationships (*Applying Theory*). Attempting to comprehend relationships is another way of making learning active. Meanings are thereby extended beyond the specific subject being studied at the moment. There should be an attempt not only to relate the chapters of a book but also to relate the various subjects one is studying. If a new subject is related to one studied last year it will serve as a partial review of the older subject and give more meaning to the current study. The author has noticed that, term after term, the more able students are those who brings materials from other courses into their study of educational psychology.

Apropos of an understanding of relationships is the question of how to take notes. Some students perceive relationships and are able to write brief but meaningful notes. A few successful students take no notes in class but immediately after class take a few minutes to jot down some of the outstanding points. Probably it is better to listen carefully, take a few notes, and let the notes serve as clues to a *remembering* session as soon as possible after class. The important thing is not voluminous notes but review of a few notes.

Capitalize on Immediate Active Recall (*Applying Theory*). Active recall means remembering material without clues. For instance, a comple-

tion-type question calls for active recall—you must supply the answer—whereas a multiple-choice or matching question does not demand active recall but is a matter of recognition. When you try to remember a name without going through a directory or list you are using active recall. It is simply a matter of getting out of your memory the data you need.

The use of active recall was earlier advised in reading for ideas. The suggestion has pertinence for all reading, not just for practice reading. After you have read a chapter, sit quietly for a few moments and think over what you have read. Try to recall as many of the outstanding points as you can. What was the main idea of the chapter? What were some of the supporting contentions? Do you disagree with any of the statements? You cannot afford not to take time to carry on this active recall.

Active recall can also be used for other college activities. It can be employed in your laboratory and lecture periods. Spend a few minutes immediately after each period asking yourself such questions as those suggested above. After a few minutes devoted to active recall take a few more minutes to read your class notes to determine how much you remembered. Thus, you will be combining the active-recall process with the recognition process in learning effectively. If another class follows immediately and there is no time for active recall, use the first part of the free period which follows the two classes for active recall in both subjects. It is worth reemphasizing that you cannot afford *not* to employ this suggestion.

A GUIDING CONCEPT FOR STUDY

Growth Is Slow but Steady. Among the several principles of growth one worth mentioning in the initial phases of our study is that growth is a slow and continuous process—it is not saltatory. This means that the rate of growth continues steadily rather than in spurts. A steady rate does not necessarily mean that the rate is at all times the same. A human being grows more rapidly during the first year of life than he does from his sixteenth to his seventeenth birthday. Nevertheless, growth proceeds steadily and constantly. Constancy in the rate of growth is evidenced by the fact that a child who is relatively large at age two will probably be relatively large as he nears maturity.

Growth takes place mentally and educationally as well as physically. Parents become impatient with the slowness of children to act in mature and approved manners. Teachers become discouraged because lessons in arithmetic, language, and courtesy are learned so slowly. Students become impatient with the routines that build skills and knowledge. The result of this failure to recognize growth as a gradual development is an almost universal search for panaceas. Parents, pupils, teachers, and citizens seem

The authors deal with such matters of adjustment to the college environment as attitudes, effective reading, note taking, preparing for examinations, and the presentation of themes and term papers.

Gerken, C. d'A., *Study Your Way through School*, Chicago: Science Research Associates, Inc., 1947.

This booklet was written for high school pupils, but the materials are pertinent to the college student's problems. Planning time, concentrating, note taking, and preparing for examinations are among the topics considered. Attention is given to fundamental attitudes.

James, William, *Talks to Teachers on Psychology*, New York: Henry Holt and Company, Inc., 1899, new ed., 1939.

John Dewey and William H. Kilpatrick say in the preface, "The artistic power of James is a commonplace. . . . For the message it still has to give we wish it read and studied afresh by the teachers of our country."

Robinson, Francis P., *Effective Study*, New York: Harper & Brothers, 1946.

A text-workbook for college students. Personal health, effective reading, distribution of time, and the problem of vocational orientation are among the topics treated. Educational deficiencies and a program for their remediation form a substantial part of the book.

Witty, Paul, *Streamline Your Reading*, Chicago: Science Research Associates, Inc., 1949.

An outstanding authority in the field of reading summarizes for youth his suggestions for better and faster reading.

AUDIO-VISUAL MATERIAL

How to Read a Book, Coronet Films, Inc., 65 East South Water, Chicago 1. (10 min, BW or C, sd.)

Since impression, as well expression, is part of the creative act, improvement in reading plays an important role in personal efficiency. Shows how to get information in an economical manner.

How to Study, *Coronet*. (11 min, BW, sd.)

This shows how studying can be made more interesting and profitable by organizing work, budgeting time, reading with a purpose, and knowing how to find reference material quickly.

3

TEACHER PERSONALITY AS A FACTOR IN LEARNING

THE STATEMENT "As the teacher is so is the school" probably is not all of the truth, but it contains truth. Study after study confirms the fact that pupils learn what the teacher *is*. They absorb his attitudes, they reflect his convictions, they imitate his behavior, and they quote his statements. The best buildings, the finest materials, and the most carefully written books cannot overshadow the importance of the teacher. Such basic problems in teaching as motivation, discipline, social behavior, and pupil achievement revolve about the personality of the teacher.

Personality includes knowledge, skill, ideals, and attitudes—and it is with these qualities that this chapter deals. This chapter continues the emphasis on you—the student and future teacher—an emphasis which is certainly warranted if there is any truth to the statement that the prime requisite for the nation's mental health is a corps of properly trained and personally adequate teachers.

THE ROLE OF THE TEACHER IN PUPIL BEHAVIOR

Influence of Teacher Personality. Mr. A. was slightly less than six feet tall, was quite thin, had a large nose, and smiled easily but not effusively. He was not, however, grim. Alex, his largest, and brightest, sixth-grade pupil, was told three times within an hour to stop eating candy wafers—at the end of the period there was one in his mouth. There was some confusion in the room—pupils were moving about, jostling and giggling—but there were also several seriously engaged in work. Mr. A. worked with those who wanted to work and joked with those who did not want to work. He exercised his sense of humor by telling jokes and laughing with the pupils. At recess time most of the pupils went outside in a somewhat orderly manner. One girl insisted that she wanted to stay with Mr. A. She had some problems she wanted to talk over, and despite the fact that she was told to go outside she stayed indoors.

When the principal was asked why Mr. A. was so "easy" on his pupils

he replied, "He is very effective with some pupils." The girl who stayed in was under the care of a psychiatrist. Another teacher had asked to be relieved of responsibility for her. Subsequent visits to this same classroom showed a great improvement in pupil behavior and more pupils seriously engaged in work.

Mr. A. was effective because of what he was and what he did. He liked children. He genuinely accepted them *as they were*. The disobedient wafer chewer was accepted. The intent workers were appreciated. He recognized that the emotionally disturbed "clinging vine" girl needed help. He voluntarily spent Saturday mornings coaching a baseball team. He transported the youngsters to ball games, movies, the dairy, and the art museum in his own car (some of the riders chose to go with him rather than in their fathers' cars). At the end of the year the wafer eater had filled his appetite and was a staunch defender of Mr. A. and his excellence as a teacher, the girl's emotional condition had improved, and the hard workers continued to work hard.

Mr. D., a high school teacher, presented a sharp contrast, but he too was effective in his own way. He was a stocky, red-faced, heavy-bearded, spare-haired athlete. His movements were quick, and his jaw was prominent and tight. He smiled rarely, talked rapidly, and barked orders like the proverbial sergeant. In fairness to him it must be said that he was employed after the pupils had laughed another teacher out of the school in the first two weeks. No one laughed at or with Mr. D. When he spoke pupils listened. Pupils were to be seen and not heard—even if they had a question. They studied algebra and general science earnestly. It is possible that some learned to like these subjects because they acquired some competence in them. But most of the pupils learned also to dislike Mr. D. The dislike reached a high point in one junior, who was, at the time, experiencing considerable prestige as an up-and-coming middleweight. There was considerable invisible "sparring," and pupils were relieved when it was announced that Mr. D. would continue his study of law the following year. Getting subject matter across is not always good teaching.

Studies of Teacher Personality and Pupil Behavior. In every classroom the behavior and attitudes of pupils are being formed by the behavior, methods, attitudes, and skills of teachers. This fact is verified by formal studies. Paul Boynton and his associates found that children begin to take on the characteristics of teachers in periods as short as two to two and a half months. More than seventy teachers and one thousand fifth- and sixth-grade pupils were studied. The data showed that those pupils who had emotionally stable and mentally healthy teachers had markedly better mental health and emotional security than did the pupils of unstable teachers. In every measure those pupils ranked most unstable who had tense and unstable teachers (31). In another study Clara Bassett compared

three teachers, each with about forty-five pupils, and found remarkable differences in the incidence of reported behavior problems. Some teachers, she found, regularly have more disobedient, untruthful, discourteous, and disorderly pupils than do others, partly, of course, because of the different manners in which teachers view and report pupils, but also, it is suggested, partly because of the differences in the atmosphere created by the teachers (16, p. 50).

"Acting like the teacher" is not simply a matter of modeling oneself after an ideal. It is a matter of identifying oneself with the teacher in order to perceive situations in the same manner. This imitation may be of specific mannerisms or attitudes, but it is the *outcome* of identification (212, p. 147). H. A. Overstreet, in discussing "the mature mind," exhorted teachers to act the part of maturity in order to provide a goal for pupils (208). This means that teachers must act in a mature manner by exercising rational authority and dealing with important issues and ignoring insignificant ones. It means developing plans to promote pupil growth as well as provide professional satisfaction for the teacher.

Daniel A. Prescott,[1] after a study of the role of emotion in education, has given a terse summary of the meaning of emotional climate and of the teacher's role in its creation.

> Different people tend to create different climates of feeling among their associates; and different groupings of people show prevailing moods as different as the weather of the arctic and the torrid zones. Some groups swelter at their tasks in the heavy, humid oppressiveness of obligatory functioning, like a sea-level metropolis in midsummer. Others buoyantly undertake common responsibilities with the light, stimulating freshness of the autumn in high altitude dryness. The whole odor of life is sweet or sour, fragrant or foul, tangy or stifling, according to the moods we inhale from those around us.

Elizabeth Avery states that if the teacher is emotionally well adjusted he is more capable of accepting manifestations of emotional immaturity on the part of pupils. Such a teacher is able to accept the negative comments of pupils as indications of personal problems rather than of animosity toward the teacher (10).

Perhaps one of the most significant examples of the effect of teacher personality is that reported by Ruth Fairbank. She found that a group of school children whose potentialities for adjustment had been very low revealed extremely satisfactory adjustment after a period of seventeen years. She attributed the adjustment of the pupils mainly to their teachers —teachers who believed in their task and had faith in their pupils (90).

[1] Daniel Prescott, "Emotional Weather," *The Educational Record*, 20:96, 1939

What pupils learn, whether academic knowledge, social behavior, or personality traits, is a matter of slow accumulation. The effects of one teacher may be canceled by another, but there are at least temporary effects. In many cases the impact of teacher personality persists for years. Fears, attitudes, ideals, and ambitions have been taught by and learned from teachers. The fact that a whole class does not respond in the same manner does not mean that individuals are not being affected. It has been frequently said that "child behavior reflects parental handling." When we consider the amount of the waking time of the child that is spent with teachers, it can also be safely said that "pupil behavior reflects teacher personality." A basic step toward the improvement of mental health in the schools is irrevocably and inevitably a matter of securing teachers who are themselves in good mental health.

Teaching Problems and Teacher Personality. Discipline is a constant problem in education. A few pupils may temporarily need the security of rigid control. Others are restive under such a regime. The usual result of dictatorial control is that pupils ultimately break the boundaries and get into trouble. Their accumulating resentment may cause them to break windows, write on toilet walls, or deface books and materials. One supervisor summarized this problem by saying, "I think I can tell pretty accurately the kind of teachers there are in a school by the number of windows we have to replace annually."

Some teachers, by virtue of their patience with and understanding of pupils, motivate them constructively. In such a group most of the pupils are working close to their capacity. Knowing and understanding pupils leads to acceptance of them. This, in turn, enables the teacher to praise when it is appropriate or to prod when necessary. As for the child, acceptance stimulates him to concerted effort. Rejection prompts the pupil to "leave the field." The teacher's range of knowledge and interests is also important in motivation. Knowing what book to recommend, to whom, and when, is helpful. Knowing something about pupils' interests—horses, photography, philately, and popular music, for example—will provide points of contact. Knowing when to admit ignorance (most easily done when one possesses a fundamental sense of security) is sometimes stimulating. Pupils then feel that teacher and pupils are learners together, and thus learning is stimulated by its cooperative nature.

Similar relationships can be indicated for such problems as social adjustment of pupils. Teachers set the pattern. Pupil self-confidence is stimulated by teachers who have confidence in themselves and in their pupils. The role of teacher personality in pupil behavior presents a heavy professional responsibility. Fortunately, this responsibility carries with it a rich opportunity for personal growth and development.

CHARACTERISTICS OF EFFECTIVE TEACHERS

Variable Criteria of Effectiveness. This section will not include a list of unachievable traits or point toward a stultifying uniformity. It is gratifying to see a young and beautiful teacher who was a campus queen or "Miss Blankville" only yesterday. She welcomes young misses and young men as they flock around her to talk and ask questions. She is levelheaded, professionally well prepared, and an energetic worker. Most of the youngsters openly assert that she is wonderful. Her roommate and fellow teacher presents a marked contrast. She dresses well, is sincere, and is also well educated for her job. But she is somewhat shy and is not colorful. She does "wear well," though it is difficult to become acquainted with her. At noon or after school, a lone boy or girl may come to talk with her. This teacher has so-called "warm, friendly relations" with only a few pupils. But these pupils are not part of the throng which clusters about the former "Miss Blankville." They are pupils who find in the quiet, reserved teacher a kindred spirit and a great stimulus for personal security. Without this teacher these pupils would receive no help from an understanding adult. Both of these teachers have an important part to play in the balanced functioning of the school.

The moral of this example is that you need not try to assume the personality traits of some other teacher in order to be effective. You need not attempt to develop all the characteristics named in any particular list. There are, however, fundamentals which can serve as a guide to personal improvement, some of which will be mentioned in the following paragraphs. The main point is that each teacher in his own unique way can contribute to the growth of pupils by being his own best self.

Criteria Listed by the American Council on Education. The Commission on Teacher Education of the American Council on Education, after analyzing the nature of the task of teaching in our day, concludes its study by discussing the qualities needed in teachers, summarized below (4, pp. 154*f*.).

1. Teachers should have respect for the freedom of all people to grow and a belief in their ability to grow. Basic to this trait is the integrity of the teacher himself.

2. They should have a feeling of genuine community-mindedness, manifested by friendly relations and a willingness to adapt themselves to local mores.

3. They should believe in reason and be able to deal rationally with personal, community, and educational problems.

4. They should possess skill in cooperation, because teaching is a social skill. "We" feelings should contribute to "our" purposes.

5. They should possess knowledge and skills in professional activities.

6. They should constantly seek to enhance the breadth and integration of their knowledge.

7. They must be able to transform their knowledge into words and forms that have meaning for the particular individuals whom they teach.

8. They must have a feeling of friendliness for children—a genuine affection for the many types of young people.

9. They must reinforce friendliness with an understanding of the growth and developmental processes of children.

10. They should possess unusual understanding of their society and be in accord with the fundamental convictions that support that society.

11. They should be effective citizens in the wider community as well as within the confines of the school.

12. They should be able to evaluate themselves and their pupils in terms of the worthwhileness of activities. They should be able progressively to improve such activities.

13. They should have a profound conviction of the fundamental worth of teaching.

The commission indicates that good teachers will always vary in the particular combination of traits that makes for excellence of teaching. The purpose of the list is to point out goals for growth. It is up to each reader to determine which goals are most worthwhile and achievable for himself.

Criteria Stated for the U.S. Office of Education. Frances V. Rummell has described "distinguished examples of the best professional talent." These descriptions may be summarized into five generalizations (228).

1. The best teachers are professionally alert. They do not live their lives in the tight confines of the classroom. They are attempting to make the community and the school better institutions for the life of young people.

2. They are convinced of the worth of their job. Their ambition is to improve constantly in the work to which they have dedicated themselves.

3. They seem not to be irritated by the taboos on personal liberties that are said by some to characterize the teaching profession. Apparently they are so psychologically mature that the irritations are viewed as minor in comparison with their great opportunity.

4. They have an artistry in human relations which stems from observing the workings of psychology, biology, and cultural anthropology in the classroom.

5. They are humble about their own need for growth because they realize the magnitude of their responsibility. "They are poignantly aware that under their influence this raw material [human resources] may also change its very destiny" (228).

This set of criteria makes one psychological fact clear: Purpose, or motivation, is a basic feature of behavior. Good teachers see their goals clearly and with conviction. Another feature is that the inevitable change which characterizes life demands that the teacher give continuous attention to planned growth.

The Pupil's Viewpoint: Best-liked Teachers. The pupil is the focal point of the school. His position should give him excellent qualifications for judging the qualities which make an effective teacher. Regardless of what parents think constitutes a good teacher or what qualities administrators seek when they hire, the youngster is the final judge. If the objectives of education are to be realized, a pupil must first like his teacher. If he learns to dislike hard work, books, school, and the teacher, the enterprise of education must to that degree be considered a failure.

Paul Witty analyzed 14,000 letters from pupils in grades 1 to 8 writing about "The Teacher Who Has Helped Me Most." The following traits were mentioned in the order of frequency: (1) Good teachers have a democratic and cooperative attitude. (2) They are kindly toward and considerate of individuals. (3) They are patient. (4) Their interests are varied. (5) They are pleasing in appearance and manner. (6) They are fair and impartial. (7) They have a sense of humor. (8) They are consistent in behavior and have good dispositions. (9) They take an interest in pupils' problems. (10) They are open-minded and flexible. (11) They make use of recognition and praise. (12) They are unusually capable in their subjects (294).

The foregoing list was compiled from the writing of gifted pupils. It is interesting to note, however, that it is quite similar to a list compiled from letters from high school seniors. Their first ten desirable characteristics in teachers were: (1) is helpful in school work, (2) is cheerful and good humored, (3) is companionable, (4) is interested in and understands pupils, (5) stimulates interest, (6) has control of the class (ultraprogressives, please note), (7) is impartial, (8) avoids sarcasm and nagging, (9) is businesslike, and (10) has a pleasing personality (118, pp. 131*f.*).

Such lists are subjective and vary from individual to individual. It has also been found that the lists vary somewhat with the grade level of respondents (54, p. 18). However, all the traits indicated in the two foregoing lists appear among the first twenty-five from any given grade level. These lists are informative. They might well serve as a point of orientation for development. However, it should be remembered that it "takes all kinds."

The Criteria of Growth and Competence. The philosophical tenet that one cannot stand still is being confirmed by psychologists. Studies of aging and senility indicate that the person who keeps mentally alive also

lives longer. The goal of adding years to one's life has been changed to adding life to one's years. Frailty of body and mind is not an inevitable part of later life. Atrophy of body and mind can be retarded by exercising one's capacities (49). It is perhaps too early to impress you with the import of these findings. But the implication is that you are now forming the intellectual, emotional, and physical habits that will condition both your present and your future. In listing traits of well-liked teachers, pupils have provided a stimulus to a worthwhile goal: the habit of continual growth.

Competence is not merely inherent talent. It is not a gift from your professors. It is not a revelation from a textbook. It is the result of a clear goal, many hours of work, more hours of reflection, many irritating failures, and a few gratifying successes. And there is another chain of events. Competence comes from work. Confidence comes from competence. The confident and competent teacher can accept pupils. Q.E.D.: The traits that make a successful and well-liked teacher are the result of a steady process of growth.

TEACHER PERSONALITY: GENERAL CONSIDERATIONS

It is deplorable that there is little attempt to select teachers who are attractive social personalities. Admission to the ranks of the teaching profession is largely dependent upon one's own choice and his fulfillment of specified academic requirements. In a few progressive teacher-education institutions there is an attempt to select candidates who have desirable personality characteristics. In some instances, guidance facilities are available to help remedy deficiencies. But in most cases the search for more effective personality is left to the individual.

Many good books on developing an effective personality are available, and teachers' personality problems are fundamentally the same as others' and are, moreover, matters of common sense. Hence, it it will be sufficient here to make only a brief summary of important considerations.

Pay Attention to Physical-health Factors. Either teaching attracts those who are in good health, or the profession fosters good health. Insurance salesmen consider teachers sound risks because they are relatively free from accident and disease (281). One should see to it that sufficient time is allowed for an adequate amount of sleep. One should eat proper foods—in sensible amounts, in a leisurely manner, and in the company of congenial people. One should engage in regular exercise appropriate to his age and preferably in the open air. His physical-health program should also include regular medical examinations and the immediate care of minor ailments. These are simple and well-known recommendations, but it appears that teachers do often neglect basic health practices.

Provide for Rest and Recreation. The college schedule discussed earlier can be adapted for the teacher's use. In teaching, as in other occupations, one needs relief from the daily routine. Leisure time is a contribution to the welfare of both teachers and pupils. Time should be allowed for recreational reading, concerts, movies, cards, dancing, and so on. Rest and recreation provide avenues for utilizing abilities and interests which are not called for in teaching and thus tend to foster the exercise of all facets of one's personality. The added zest provided by a well-rounded program of living might well be considered a professional responsibility. Certainly it will help to provide the varied interests which children appreciate in their teachers.

Seek Improved Insight into Your Conduct. It is important that teachers know themselves. Steps toward this goal can be taken by studying courses in psychology and mental hygiene and by general reading. One can profitably spend time in reflection upon his own past experience to discover the source of certain attitudes, interests, prejudices, and ideals. Objective attention to the constructive criticism of fellow teachers, friends, or supervisors can be advantageous.

Gain Security through the Development of Skills. An adult gains security from a feeling of confidence in his own abilities. Thus, the more the teacher learns about professional matters and pupils, the quicker he will achieve security. Much of the nervousness and tension that attends teaching can be prevented through planning and study. Thorough preparation for class activities will give the teacher a feeling of confidence.

View Work as an Opportunity. Very frequently one's problems are not so serious as his attitude toward them. Teaching can become a rewarding experience if it is looked on as a means of obtaining justifiable recognition, as a profession that opens avenues of novel experience, and as *the* activity that gives meaning to life. Increasing recognition is being given to the fact that retirement and pensions are not *the* way to happiness and security. Rather, in our society at least, happiness comes from having a job to do and the opportunity and skill to do. It is largely through work that one gains recognition from others and achieves personal security.

Learn to Get Along with Others. Teaching success is very largely dependent upon one's ability to get along with others. Hence, the teacher should seek opportunities to gain experience in dealing with others—peers and pupils. It will be advantageous to look for the good points in all those whom he meets. His relationships with others will improve when he seeks to understand their particular backgrounds and problems. The statement "To know is to understand" is more than a popular cliché—it is a psychological fact. Teachers are consistently advised to look for

the causes of their pupils' behavior. They should also seek to understand the causes of their colleagues' eccentricities and those of other adults with whom they come in contact. School administrators look to the extra-curricular record of recently graduated teacher-candidates for evidence of ability to get along with others.

Maintain a Confidential Relationship with Some Other Adult. Tensions can often be kept from becoming frustrations by being expressed orally. Many difficulties in adjustment can be avoided if adults have dependable friends to act as their confidants. The confidant need not necessarily give advice. Talking about personal problems sometimes serves to straighten them out in the person's mind so that he can think more clearly, and emotional relief may be derived simply from the cathartic value of talk. Problems will arise in teaching; and the help of others in solving them should be sought. This does not necessarily mean a wholesale airing of difficulties. The person in whom one confides should be mature and stable.

Try to Face Stress and Strain with Emotional Poise. This may seem like advising someone with a headache not to have one. But, as was indicated above, attitude is important. It is possible to say, "I'll take it easy," and to do so. It is helpful to realize that conflict is normal; others too have problems. It is also helpful to realize that today will pass, and it will take many days to make a lifetime. Stopping to reflect on the situations that in the past seemed to be so serious and perplexing but which now can be viewed with equanimity will help one face present difficulties with greater poise. It is helpful, too, to evaluate one's total situation rather than to give excessive attention to specific and often minor details.

Substitute Planning for Worry. Some people do "worry themselves sick." Prolonged worry decreases efficiency, interferes with digestive processes, disturbs sleep, makes one irritable, and destroys personality poise. Worst of all, it solves no problems. Worry may be defined as circular thinking—thinking that arrives at no solutions. It is a matter of starting with problem *A*, going to obstacle *B*, encountering condition *C*, meeting barrier *D*, and finally arriving back at problem *A*. Certainly it is advisable to plan for the future and to reflect on one's past so that previous errors will not be repeated. But to wish that the past could be changed, to think of how nice things might have been, or to be disturbed by things that have not yet transpired is foolish and futile. Scarlett O'Hara, in *Gone with the Wind*, had a point when she said, in the face of presently insurmountable problems, "I'll think about that tomorrow." Some things are beyond the individual's power to control—these must be accepted. When something can be done, one must think clearly, arrive

at a point of choice, act upon the choice, and then refuse to ponder whether the choice was the wise one.

Give Attention to the Present Situation. We do all our living today. The cliché "Today is yesterday shaking hands with tomorrow" is psychologically sound. It is an expression of the fundamental fact that today one uses the experience of the past to shape a more secure future. People with robust personalities have learned that unless they live fully, happily, and effectively today there is small likelihood that tomorrow will be much better. If we run away from problems, our habits, our attitudes, our methods of dealing with people, our skills, and our capacities remain much the same in the next situation.

Foster a Sense of the Ridiculous. Laughter is a means of tension release. It eases many difficult stiuations. It creates the impression that one is a kindly and friendly person. It is an indication of a feeling of freedom. A sense of humor is a quality well worth cultivating, and we need to exercise it in daily living. One word of caution—teachers should be careful to laugh *with* their pupils, not *at* them.

Give Religion a Place in Your Life. Many psychologists and psychiatrists emphasize the fact that religion is a great preventive of mental illness and that it is of therapeutic benefit to those who are already ill (145, p. 264). It must be admitted that some religions, stressing fear and retribution, are liabilities to mental health. But religions which stress love and devotion and service to one's fellows are important elements in a stable personality. Many specific advantages can be cited, such as the catharsis of prayer; the feeling that there is a God Who cares about us as individuals; the relaxation and serenity that is part of church and synagogue services; the help of the minister, priest, or rabbi who acts as a counselor; the feeling of oneness that accompanies the singing of hymns; and the release from daily pressures that comes from devotion and worship. Perhaps the greatest advantage lies in the lesson of service to one's fellows: "inasmuch as ye have done it unto one of the least of these my brethren, ye have done it unto me."

Just Do the Best You Can. Many persons make their life miserable by expecting too much of themselves. They seem to suffer from a perfectionistic complex. It is, of course, desirable to have high goals and ideals, but it is also true that frustration is caused by blocked or impossible desires. Being satisfied with one's best is not a philosophy of mediocrity; rather, it is a highly practical orientation. Doing all the things suggested in this outline for personality development may be impossible for most; but to come a little closer to the ideal than we were yesterday is a possibility for all. Everyone does not have to be a "Miss Blankville," but each of us can be more consistently his best self.

TEACHER PERSONALITY: PROFESSIONAL CONSIDERATIONS

An important aspect of personality orientation for every individual is the attitude which he takes toward his work. One's work becomes a powerful constructive force if he likes it, if he sees significance in it, if it exercises various facets of his personality, and if it provides personal satisfaction. Teachers would do well to consider the many advantages which teaching provides. It must be admitted that there are some disadvantages to teaching: Teacher loads could well be reduced, salaries might be somewhat higher, plans for sick leave and retirement need study and improvement, and the public could be somewhat less negatively critical. But these situations are being improved; moreover, they can profitably be regarded as challenges to professional growth and should be attacked through your professional group, which will need your active membership.

There are also, depending to some extent on the view one wishes to adopt, a large number of advantages inherent in the profession which should be considered in looking at teaching as a life's work.

Teaching Stimulates Achievement. Teaching provides an opportunity for professional achievement, thus tending to satisfy the fundamental desire for accomplishment. Studying one's specialty, keeping abreast of current developments, and contributing to the activities of professional organizations are ways in which one may strive toward the goal of better teaching.

Teaching Is Important Work. Teaching provides the personal satisfaction of knowing that one is engaged in work that is deemed of great significance in a democratic society. Our founding fathers, as well as the present generation, have respected, and do respect, the value of education for the individual and for society as a whole.

Teaching Stimulates Intellectual Activity. Teaching encourages one to keep up to date. Regardless of the specialty one has developed, teaching stimulates one to keep well posted on the many currents of life in order to answer the countless variety of children's questions, to meet varied interests in the classroom, to relate schoolwork to contemporary events, and to make contact with other professional workers.

Teaching Provides for a Variety of Work. If variety is the spice of life, then teaching is well seasoned. There are many different kinds of responsibilities to be assumed: specialization in various subjects and grade levels, guidance responsibilities, work with exceptional children, and administrative and supervisory responsibilities. But even if one were to teach the same subjects at the same grade level year after year there would still be variety provided by the different problems each new child brings to school with him.

The Hours of Work Are Reasonable. The beginning teacher is likely to find the hours of work long; but the more experienced teacher finds that many economies in time can be practiced to make the total teaching responsibility reasonable. The experienced teacher *lives* his work and no longer has to search for material—it comes up in all areas of his life—he learns how to delegate responsibility, he systematizes his notes and reading. All these factors enable him to spend week ends and periodic vacations developing and pursuing interests that contribute to the well-rounded life. There is the press of extra class duties and the need for preparation, but these duties are not considered dull by teachers who are convinced of the merit of their work.

The Income Is Steady and Assured. Teachers' salaries are admittedly not very high. The maximum salaries are especially discouraging to a young man or woman wishing to establish a home or family. But once he has a job the teacher knows that only in extraordinary circumstances will it be taken from him on short notice. Whatever the salary, it is assured. In fact, teachers have a reputation for planning expenditures wisely because of the assured and steady income.

The Work Involved in Teaching Is Clean. Aside from a little chalk dust (and its pervasiveness is decreasing) and the litter attendant to work-in-progress, the work is physically clean. Occasionally some lesson on physical hygiene must be reemphasized to pupils, but on the whole the work is physically wholesome.

Teaching Provides Contacts with the Enthusiasms of Youth. Youth characteristically seem to feel that today is a good time, that things will be even better when they take charge of affairs, and that there is a rosy future for them. These contacts help the teacher maintain his own balance, perspective, and hope.

The Profession Has a Healthy Degree of Internal Criticism. Teachers are, for the most part, constantly seeking better ways of doing their jobs. The characteristic theme at conferences is not praise for what has been accomplished but rather criticism and search for improvement. This has the advantage of keeping the teacher's interest alive and growing.

One Works with Able Persons. Teaching provides an opportunity to associate with professional coworkers. This is true, of course, in other fields. But, perhaps because it is so highly social, teaching has attracted a group of individuals with noticeably high ideals. Teachers, as a group, are relatively stable (3). Very rarely does one hear of a teacher guilty of moral or legal transgressions. Divorce is relatively infrequent. During the Second World War teachers were successful in a wide variety of military activities: recruit-training functions and specialized teaching, administrative duties, psychological services, and selection and classification

duties, as well as ship commands. Opportunity for associating with able persons provides an impetus for continued personal growth.

Teaching Is a Creative Opportunity. Teaching provides an unusual opportunity for creative expression, *i.e.*, dealing with pliable youth. Thus, one can satisfy his desire for accomplishment, for continued growth, and for social significance. These advantages tend to keep him from becoming morbidly preoccupied with minor irritations. Lawrence K. Frank envisages the possibility of creating a new level of humanity—one in which good mental and physical health, high ethical aspirations, and presently unseen horizons are achieved (97). Teachers have the challenge of being the focal point in such a creative enterprise.

Stability of personality is characterized by many qualities, but attitudes and willing acceptance of responsibilities are of paramount importance. Teaching provides both a significant task and an opportunity to know oneself and others. It is fortunate both for individual teachers and for society as a whole that personality development is recognized as being vitally important. As the teacher helps develop sound personality in pupils he reaps the personal benefit of his own growth.

SUMMARY

Psychological Principle	*Practical Application*
The same teacher elicits different responses from different pupils.	Personal uniqueness of individual teachers may be their great asset.
Pupils consciously or unconsciously take on the behavior of teachers.	Each teacher has the unavoidable responsibility of being as good an example as he can be.
Many teaching problems stem directly from teacher personality.	A step toward more effective teaching is to enjoy life more fully.
An outstanding characteristic of a good teacher is a conviction that teaching is a highly worthy profession.	A teacher owes it to himself and his pupils to develop a positive view of teaching.
An outstanding characteristic of a good teacher is the habit of continuous growth.	Every teacher should be planning where he can go next—personally and professionally—in his development.
Personality development depends upon giving some exercise to all facets of personality.	Teachers should periodically check to see whether some important aspect of growth is being neglected.
Personality development is not a mystery—it results from applying simple and widely known psychological facts.	Every teacher should adopt a planned program for personal growth and pursue it consistently and diligently.
Some negative features of teaching are low salaries, unreasonable community criticism, and poor working conditions.	Teachers can help solve these problems by active membership in their professional group.

The seriousness of one's problems is dependent upon the attitude taken toward them.

Teachers would profit by taking a positive view of their profession—seeing all advantages possible.

PROBLEMS AND EXERCISES

1. Judging from your own experience, would you say that a teacher should be above average in appearance? In this context evaluate the statement "Beauty is as beauty does."
2. Discuss pro and con the statement that teacher personality has no permanent effect upon pupil personality.
3. Visit a classroom to see whether you can detect any relationships between teacher personality and the general behavior of all the pupils.
4. Study the lists of criteria of teacher effectiveness and pick out the three you think are most important. Compare your list with that of a classmate. Is the variation, if any, justifiable?
5. Do you think pupils can be well motivated if they dislike or fear their teacher?
6. Talk with some public school teacher about his view of teaching. Do you think his general personality is reflected in his attitude? Do you feel that his effectiveness as a teacher would be influenced by his attitude?
7. What other advantages of the teaching profession could be included in the list given in the text? With which do you disagree?
8. Do you think the discussion in the text was properly balanced with respect to the brief mention of the disadvantages of teaching?
9. What are some of the implications of the statement "Teacher mental health is both a personal and a professional responsibility"?

SUGGESTED ADDITIONAL READINGS

Bernard, Harold W., *Toward Better Personal Adjustment*, New York: McGraw-Hill Book Company, Inc., 1951, pp. 394–416.

A somewhat more detailed presentation of the factors in a personal and positive program for mental health. A set of questions provides an opportunity for the individual to make a check of his own application of the principles.

Smith, T. V., *Building Your Philosophy of Life* (Life Adjustment Booklet), Chicago: Science Research Associates, Inc., 1953.

This booklet by a philosopher, politician, and professor was written for young people. The need for thinking through one's purposes is explained, and basic considerations for a personal philosophy are presented.

Umstattd, J. G., in *Adapting the Secondary-school Program to the Needs of Youth*, Fifty-second Yearbook of the National Society for the Study of Education, Part I, pp. 274–295, distributed by University of Chicago Press, Chicago, 1953.

This discussion points out that the needs of youth demand teachers who are broadly educated yet carefully trained for specific guidance duties.

Wiles, Kimball, "Teaching Is Skill in Self-improvement," *Teaching for Better Schools*, New York: Prentice-Hall, Inc., 1952, pp. 323–351.

Areas discussed in this chapter are evaluating and improving one's teaching, working toward personal maturity, and improving through experimentation.

AUDIO-VISUAL MATERIAL

The American Teacher (March of Time), McGraw-Hill Book Company, Inc., 330 West 42d St., New York 36. (20 min, BW, sd.)

Advantages and disadvantages of various methods of teaching are indicated. Education is depicted as a serious community responsibility which must be carefully appraised if our youth are to receive maximum benefits.

Who Will Teach Your Child? McGraw-Hill. (24 min, BW, sd.)

A serious question is posed for teachers and parents. Ways of attracting persons of superior talents into teaching are suggested. A view is given of what good teaching is and what it is worth.

PART TWO

LEARNING AS A GROWTH PROCESS

LEARNING *is a growth process. The effective teacher must fully appreciate the slowness and inevitability of growth—in some direction.* Part II opens with a discussion of a persistent problem of teachers and pupils—*motivation. An awareness of the nature of motivation* will better prepare the teacher to give direction to growth processes. Developmental phenomena are examined in general terms and are followed by *an intensive study of the focal point of growth for educators—learning.* Another phase of growth and *learning is examined* in the chapter dealing with reasoning and problem solving. Part 2 concludes with suggestions for expanding and applying these growth processes through *transfer.*

4

MOTIVATION OF LEARNING

"You CAN lead a horse to water but you can't make him drink." This cliché appeals to anyone who has tried to make a baby eat something he does not want. It is also apparent to teachers that you can expose a pupil to knowledge but he will not always learn—or he does not consistently learn what the teacher desires. Not only does the school present to the pupil an opportunity to learn, but even the worst kind of school cannot halt learning. Learning from out-of-school influences, and the learning of certain attitudes toward the school and its activities, cannot be stopped. A practical problem involved in motivation is to find those approaches that will make the child eager for the kind of learning the school endorses.

THE BASIC ROLE OF MOTIVATION

The Place of Motivation in Education. It seems obvious that one must know something about the learning process in order to be a teacher. Since teaching is "the direction of learning," we must know something about how learning takes place. One can easily say that behavior starts with the organism. If one is to be effective in teaching pupils he must know some of their abilities, interests, and characteristics. But an inert organism—one without tensions—has no response and will give none until tensions are generated. That would place motivation in the starting role. Further, when the teacher first meets the members of his class, the matter of motivation must receive initial attention.

Motivation has been the primary concern of this book, though it was not discussed as such. Motivation lay behind the emphasis upon the student's seeing his place in the educational scheme, as student and future teacher. Conditions of study were treated as a motivational scheme showing the student how principles of educational psychology could be put to immediate use by the student.

The problem of motivation cannot be disposed of in a chapter. This chapter will deal with some of the outstanding features of motivation, but it is merely an introduction to the subject.

Motivation and the Teacher. There can be little doubt that the success of a teacher is to a very large extent dependent upon his ability to motivate. The successful teacher arranges situations that arouse students and encourage them to maintain more or less vigorous pursuit of a goal. Pupils enter the school with certain goals (perhaps somewhat vague ones) in mind, and little arousal is required. But it is possible that, if a teacher does not know some of the basic factors involved in motivation, pursuit of that goal and others subsequently formulated will not be maintained with vigor. Hence, motivation is more than an explosive force—like exploding powder in a cartridge—it is a propelling power—like gasoline in an automobile.

There is still another reason, and perhaps the most important one, for a careful study of motivation. The truly educated person is one who continues to study after his formal schooling has been completed. A really successful course is one which the student continues to study after he has received his final grade. Teachers who "motivate" by means of demands and threats may get a degree of conformity that is temporarily satisfactory. An example is the literature teacher who assigned thirty pages a day in a book on contemporary American literature and then gave daily tests. The test consisted of citing one line; for this line the student was to supply the name of the poem or story, author, period, and message carried by the piece as a whole. The students were motivated to do the reading; but even some of the successful students vowed never to read "literature" again. Another teacher of literature worked with individuals in interpreting stories and poems. All pupils were given a chance to participate. The bulk of the class period consisted of talks with individuals or small groups who had been previously guided into reading selections which accorded with their interests and would encourage further reading. It is safe to assume that if the students in the two groups are of equal ability, more from the latter group will develop a continuing interest in literature. This is a responsibility which should claim the attention of every teacher. Therefore, the nature and techniques of motivation must be considered.

The Meaning of Motivation. To repeat the definition given earlier, motivation is the stimulation of action toward a particular objective where previously there was little or no attraction to that goal. If we understand motivation, we know why a pupil makes one choice and not another. Boys often prefer playing football to solving problems in arithmetic. Girls frequently engage in gossip with greater enthusiasm than they display in searching for data on the Mayan Empire. But while these statements are *generally* true, they are not true in many specific cases. There are boys who prefer to work problems in arithmetic, and there are girls who

enjoy reading history. The discovery of the reasons behind the individual's choices is the study of motivation.

It must be assumed that the lessons taught in the school should take precedence over some of the activities which attract youngsters outside school. The basic role of motivation for the teacher then becomes that of learning how to stimulate youngsters to choose what is best for them. Moreover, they should be encouraged to choose those subjects which have long-term significance as well as immediate appeal. It is at this point that practical motivation by the teacher sometimes fails. The use of techniques which stress immediate desirable choice may interfere with equally desirable but remote choices. For example, a pupil may be motivated to memorize a long list of Latin words by being given an A by the teacher and a dollar for the A by his father. But the emphasis on the A and on the dollar tends to obscure the long-term value of his study. This was well expressed by F. E. Bolton [1] over two decades ago.

> On graduation from high school, what a boy loves is vastly more important than what he knows. What companions does he choose? What books does he read voluntarily? What ideals does he harbor? These are the really significant characteristics which will determine his life's career. Does he chum with wholesome pals, does he read choice literature, does he enjoy good lectures, does he participate in harmless recreation, does he take an interest in civic welfare? Or, does he seek vile companions who tell smutty stories and enter into questionable escapades, does he read trashy and indecent magazines and books, does he sneer at the church, the school, good books and all serious activities?
>
> His attitude toward society and its problems, his attitude toward religion and morals, his attitude toward duties and obligations, are vastly more important than the few items of intellectual knowledge he has gained. His spontaneous likes and dislikes, his loves and his hates, his longings and aversions, will really determine what manner of man he shall be.

All the choices and attitudes mentioned in this quotation are matters of motivation. The teacher must add his weight on the side of those choices which have the greatest long-term significance. He can do so by understanding how his methods accord with the basic phenomena of growth and with the fundamental features of personality development.

Traditional Approaches to Motivation. It has been common practice to approach the problem of motivation by listing a number of techniques that will obtain the immediate result desired. Thus, the teacher encourages the first-grader to learn to read, and to continue to read after he has learned, by praising him. He encourages the third-grader to learn to

[1] F. E. Bolton, *Adolescent Education*, New York: The Macmillan Company, 1931, p. 175. Used by permission.

spell by pinning his better papers on the bulletin board. He motivates the fifth-grader to study history by planning and producing a dramatic program. He encourages the eighth-grader to study civics by taking the entire class for a day's visit to the city hall. High school pupils are stimulated in their efforts to write by participating in the production of the school paper. Other high school youngsters "work their heads off" to get on the honor roll. These practices have worked and deserve the attention of the prospective teacher. There is only one criticism of this practical approach: There is no satisfactory means of testing the relative merits of motivational techniques.

It will be shown later that in the "mental hygiene approach" the teacher should attack the cause, not the symptom. Recently the author visited a fifth-grade class and sat near a pupil who later turned out to be the teacher's "boy with problems." After class activities started he kept saying to himself, "What'll I do? If I go I'll have to buy a present. I'll miss the fifteenth chapter [a serial at a movie theater on Saturday] but maybe that won't matter. . . ." These remarks were occasioned by an invitation to a birthday party which he was reading. He was rocking back and forth in his chair, kicking the desk in front. There was real danger of his falling backward on a pupil who was working at a floor-level bookshelf. The teacher finally took hold of his chair and asked him to help a slow-learning girl with her arithmetic. He protested loudly and was then told to busy himself with his own work. This incident illustrates the necessity for getting at causes. The boy's problem needed to be understood, and the teacher was working on it. She already had much information which helped her to understand him (one of the major factors was parental pressure on him to be the best pupil in the class); but she also had the problem of immediately stopping his disturbance of other children and classroom routine. The parallel to motivation is close. We can motivate children by the application of tested techniques. But those techniques will be more successful when we understand the theory which lies behind them.

This theory is that successful motivation in the schools should stem from the fundamental needs of children. When specific techniques fail (such as the motivation for good grades), then the teacher must ask himself, "What fundamental need has been neglected or temporarily satiated?" Then the teacher can adapt his techniques for motivation to the particular individual and to the specific time and conditions concerned.

A youngster is not instinctively desirous of displeasing adults. He simply takes what he perceives to be the shortest route to any goal. He chooses those activities which are most attractive to him. If we can un-

derstand what makes some activities more attractive than others we will be better able to make school tasks attractive. An inclusive approach to this understanding is to study basic needs.

BASIC NEEDS OF CHILDREN

Various Theories of Needs. It should be made clear that the discussion of motivation through an analysis of needs is a theoretical approach. There are exceptions to the assertion that unfulfilled needs will result in maladjustment. That is, one child who apparently is not loved deeply may be well adjusted, while another on whom love has been lavished may be poorly adjusted. But the exceptions are understandable when other needs are considered. To those who are concerned with child and adolescent growth and development there seems to be a common direction of human motives.

Table 1 presents an accumulation of lists of the basic human drives or needs. It is apparent that there is considerable duplication in the lists and

Table 1 Basic Human Drives or Needs as Listed by Various Writers

Symonds[a]	*Trow*[b]	*Thorpe*[c]	*Thomas*[d]	*Carroll*[e]
Be with others	Bodily activity	Bodily activity	New experiences	Emotional security
Gain attention	Knowledge	Purposeful effort	Security	Achievement or mastery
For approval	Sensory enjoyment	Reasonable amount of independence of action	Response	Recognition or status
Be a cause	Security		Recognition	Physical satisfactions
Mastery	Mastery			
Maintain self	Service			
Security				
Affection				
Curiosity				

[a] P. M. Symonds, "Human Drives," *Journal of Educational Psychology*, 25: 694, 1934.

[b] W. C. Trow, *Educational Psychology*, 2d ed., Boston: Houghton Mifflin Company, 1950, pp. 134–142.

[c] L. P. Thorpe, *Psychological Foundations of Personality*, New York: McGraw-Hill Book Company, Inc., 1938, pp. 216–220.

[d] W. I. Thomas, *The Unadjusted Girl*, Boston: Little, Brown and Company, 1923.

[e] Herbert A. Carroll, *Mental Hygiene*, New York: Prentice-Hall, Inc., 1947, p. 28.

Source: Harold W. Bernard, *Toward Better Personal Adjustment*, McGraw-Hill Book Company, Inc., 1951, p. 188.

that the longer lists break down items in the shorter lists. Differences in emphasis and terminology are doubtless due to the varying purposes of the authors.

Another list of basic needs is that postulated by Daniel A. Prescott (215, pp. 110f.). He based his formulation on numerous case histories of maladjusted pupils. The question was asked, "What is the child seeking to bring about by his behavior?" Psychoanalytic literature was helpful in that it directed attention to the fact that present behavior is often rooted deeply in the past. Prescott's study led him to conclude that society should be organized in such a manner as to give each person some opportunity to satisfy his basic personality needs. The school, as a social agency, should become functionally aware of these needs. That is, teachers become more effective when they work with, rather than against, natural motivational trends. The needs to which Prescott calls our attention are

1. Physiological needs: those which arise out of the structure of the organism and the maintenance of its equilibrium
2. Social or status needs: those which arise from the individual's attempt to establish himself with his fellow human beings
3. Ego or integrative needs: those arising from the individual's contact with and experience in the environment

Motivation through Physiological Needs. Paul J., whose family was in difficult financial circumstances, was causing some trouble in the sixth grade. He was only a fair reader; his arithmetic was poorer than was predicted by aptitude tests. He displayed a resentment toward the teacher and had a few physical clashes with classmates. His work was sporadic, and in general he manifested an "I don't care" attitude. Praise, bestowal of responsibilities, careful selection of books, and individual attention did not change the situation. One day the teacher noticed that he squinted and twisted his head when looking at the chalk board. The teacher began to suspect poor vision and later noticed other symptoms. An eye examination confirmed the suspicion. Paul, with his astigmatism, probably saw only a blur from the back of the room, the ophthalmologist reported. Paul's behavior changed markedly when the Lions Club obtained glasses for him.

Teachers of children with sensory handicaps stress the importance of giving their pupils as close a contact with their environment as possible. The first step in their education is to identify their visual or auditory defect and then to reduce that difficulty to a minimum. The regular classroom teacher must also realize that his work will go more smoothly when children's physiological needs are being met. Often children are not dressed warmly enough for comfort. Others may not have had an adequate breakfast. Even well-worn heels, lopsided and thin, might be causing so much physical discomfort to a pupil that the teacher is relatively ineffective. The beauty of "Thanatopsis" will probably not compete as "motivation" with ill-fitting shoes. The teacher should also realize that

proper room temperature, circulation of fresh air, properly fitted seats, and adequate lighting are important. If the need for glasses can make one child difficult in school, it is obvious that glare or dingy lighting will have a negative effect upon several children. The teacher is also responsible for alternating periods of active and sedentary work. Many schools do not have regular recess periods in the elementary grades; instead, the teacher watches for signs of restlessness after a period of quiet work and when they appear announces a play period.

It is pertinent to add that many of these responsibilities can be turned over to pupils. One pupil can be responsible for seeing that windows are opened after a play period and that the room is warm during quiet periods. Another can see that shades are properly drawn. A "captain of recess" can be named to see that rubbers and coats are worn outside. The pupils will profit by responsibility, and the teacher's burden will be lighter. It is the teacher's responsibility, however, to check periodically to be sure that chairs, desks, and tables are the proper size. This is particularly important in the lower and upper grades, when pupils are growing rapidly. "The mind can absorb no more than the seat can endure."

Classroom furniture should be arranged primarily on the basis of physiological need. If stationary seats must be used they should be placed in a corner or at one side of the room in order to leave a large open area where freedom of movement is possible. This will also leave room for construction of models and replicas or a stage for an illustrative drama—both of which are motivational techniques that recognize the physiological need for activity.

Children may require some preliminary instruction and supervision in regard to conduct in the cafeteria. Not only must some children be encouraged to choose a balanced meal, but they must be encouraged to eat in a leisurely manner. (Primary teachers may find dawdling a problem.) Just as wives are advised not to approach their husbands on money matters before the evening meal, so teachers should realize that children will be less inclined to do more difficult tasks when they are hungry.

Matt B. had an argument with the teacher. Matt regularly fell asleep in class, and the teacher finally became irritated and told him to stay awake or stay away. It was evident that Matt was not greatly motivated in the direction of ancient history. What the teacher later discovered was that Matt was greatly motivated, but physiological needs were more insistent factors in motivation. Matt's father did not approve of education and told his son that going to school would not excuse him from farm chores—nor would there be any money for "fancy clothes." Matt got up at 5 A.M. to do his chores and after school held two jobs, firing a bakery

furnace and acting as bellboy at a small hotel until midnight. The next time this teacher had a sleepy student he first sought for causes.

Physiological needs sway the choices one makes. They influence the goal sought and the speed with which the goal is pursued. They are an ever-present factor in the classroom.

The Need for Status. Art K. had fought another classmate. The fourth-grade teacher had pleaded with him not to pick on the others. She had punished him and had sent him to the principal. But there were still periodic fights. Praising him for the days there were no fights was no solution. But the remark, "Art, some of the big boys in the upper grades are picking on our boys. You are a big, strong fighter and you can protect the little boys," worked. Art was big and strong. But he was also a slow learner—he was big because he was retarded. The cause and the remedy for his difficulties could be stated in terms of status needs. He wanted to have a role of importance, but his inability to do effective school work denied him that role. Fighting was an attempt to achieve status.

Teachers in group discussions dealing with pupil adjustment often recommend, "Find something for him to do that he can do—something that makes him feel important." This is an effective principle. One evidence of lack of adjustment is dropping out of school, and a lack of status looms large in explaining dropouts. Two of the more important causes for leaving school are low intelligence scores (causing difficulty in maintaining status) and a feeling of not belonging (167). It will be found that teacher effectiveness can be increased by (1) recognizing the importance of status and (2) recognizing that children of different backgrounds achieve status in different ways.

Fundamentally, the need for status is the same everywhere. Each human being wants to be recognized as a worthy person in the group in which he lives. If he cannot get approval he may have to be satisfied with forcing recognition. Though the need for status is the same everywhere, the way in which it is achieved is not. Males of the Arapesh tribe in New Guinea achieve status by developing what we would call femininity, while the Mundugumors, also in New Guinea, place a high value on fighting, conflict, and ruthlessness (186). The teacher will be well advised to recognize that there are differences in the ways of achieving status in our own society. Children from the lower class achieve status by being pugnacious and aggressive. Children from the middle classes achieve status by being well behaved: parents praise them for avoiding battle. The lower-class boy who earns status with the teacher by avoiding battle loses prestige in the eyes of his playmates for being a "softie." But the middle-class boy by the same behavior is successful. An emphasis on grades and marks will be a source of strong motivation to the

middle-class child whose parents believe in the monetary and cultural value of an education. Grades are often less important to the lower-class child whose parents feel they are getting along well with limited education.

A practical problem illustrating the role of status may be seen in many schools in states where the laws specify compulsory school attendance until age eighteen. Some teachers and administrators want the age minimum reduced because many of these youths are troublesome But the situation is not entirely the fault of the eighteen-year-olds. Since their grade-school days, teachers have probably tried to motivate them with the threat of bad grades or the promise of good ones. When this motivation proved relatively meaningless teachers became disgusted with the stubbornness of pupils who would not learn despite ability and added other status-diminishing attitudes and actions. The result was that pupils felt school had nothing for them. But another generation of eighteen-year-olds under another teacher orientation could be different. Today teachers should recognize that there are different ways of achieving status and consequently different methods for using status as a motivator.

The study of class structure will not give the teacher all that is necessary to understand the different paths by which one seeks status. Praise, whether deserved or not, may work well with one who is little recognized at home, but to another, even well-deserved praise may be meaningless. It has been found, for instance, that some children do things for which they know they will be punished simple because they get recognition. The child's level of aspiration conditions his response to praise.

Another social need is that of affection. The expression "a warm, responsive personality" is heard frequently. It indicates a person, pupil, or teacher who feels secure and can radiate security in establishing contact with others. Characteristically one who has not had the opportunity to give and to receive affection presents a hostile front. He is often defensive. Because he is afraid he assumes the attitude of not caring or of not wanting affection. The situation is aggravated because the pupil's need for affection causes him to act in such a way that it is difficult for others to be affectionate. There are many emotionally wounded children in school. Therapy can be provided by sensitive teachers who have their own feelings in hand. The child's concern about lack of affection prevents his being motivated by the traditional lures used in the classroom. The teacher must be genuinely ready to say to the child, "*I* like you," and show it in action.

The need for social status is also reflected in the term "belonging." Some problems of behavior in children are aggravated by the parents' frequent change of residence. It is not the change itself that is to blame—most children appreciate variety. The difficulty is that for a period of

time the youngsters do not belong in the new social group. Some principals have the teachers "pass along" with the pupils (*i.e.*, one teacher teaches the same group in both the first and second grades) to capitalize upon the need for belonging. One of the factors influencing school dropouts is that certain pupils are made to feel there is no place for them in the school and its activities (279, pp. 49ff.). There are three things the teacher can do to enlist "belonging" on the side of motivation.

1. He can counsel with students to encourage them to make all their classmates feel at home.

2. He can delegate duties and responsibilities in such a way that *all pupils* are given a chance to be functioning members of the class.

3. He can group students among whom there is mutual attraction.

Social needs and physical needs should not be too sharply differentiated. The child whose uncorrected vision prevents his taking part in ball games is denied both physical and social needs. His emotional turmoil may prevent his being motivated to work hard on arithmetic, algebra, or literature. The girl who is concerned about protruding or missing teeth has a physical difficulty whose greatest impact is in terms of social and integrative needs.

Ego or Integrative Needs. These needs might be expressed as the drive to be at one with the external world and the internal self. It means the acceptance of self and the ability to face and cope with the realities of life. Prescott elaborates on this point in six items, summarized below (215).

1. The individual must learn to know and understand the world by the "rich and varied" experiences he has within his environment. He must have a chance to experience success and failure, pain and pleasure, and cooperation and antagonism in order to know the meaning of reality.

2. The individual must achieve harmony with reality by learning the meaning of authority which is beyond human control. One must learn through progressive experiences to face and accept that which is inevitable.

3. The individual must, through the process of "progressive symbolization," summarize his experiences into generalizations that give meaning and purpose to life.

4. Every individual must become increasingly self-directive. The penalty for neglecting this need is inconsistency of conduct at the best and permanent immaturity and dependence at the worst.

5. The individual needs a balanced experience of success and failure so that he may find his proper role in life. Too much failure develops a feeling that one is "no good," and too much success lulls him into satisfaction with mediocrity.

6. An individual must achieve selfhood, or individuality, by harmonizing his own ambitions with the demands of society.

Prescott[2] concludes his description of the integrative needs with a challenge to educators.

> Integration is common in young children. It is a pity that schools do not see in the *continuous* maintenance of integration by their pupils a criterion for the validation of both curricula and methods. It is a shame to let children progress through a whole series of experiences that arouse conflicts, to permit conditions to continue which frustrate their needs, and then, when the inevitable warping of personality has occurred, to undertake re-education. Instead, we should set the stage for experiences that will meet the personality needs of our children and thus avoid so much maladjustment.

The records of psychologists and psychiatrists are full of cases similar to that of Alfred. Alfred was first called to the author's attention by a college admissions officer who wanted to know whether the boy could be accepted as a risk or a challenge. Alfred's reports showed that he had made a fair record in high school but had flunked out of two Western colleges and one in the East. His aptitude tests were encouraging. A call to his former high school principal offered a clue to his ineptitude. The mother was a constant source of irritation to his high school teachers. She selected Alfred's courses, she determined the amount of home work he was to do, she approved or disapproved (generally disapproved) his choice of girl friends, and she selected his school activity program. She had frequent conferences with professors and deans about how Alfred could be helped. This had involved two plane trips in one semester for conferences in the East. The case was a challenge. The admissions officer made an appointment with the boy, who came with his mother. An interview was held with the mother alone, at which time she was told, "Perhaps something can be done. But Alfred must make up his mind for himself. He must freely choose to make this fourth try at college. If he does not so choose it will be best to forget it. The courses, the hours of study, the activities he pursues must be *his own choices.*" It was not a conference; it was brutally frank advice, and the mother was told, "It is your fault." The mother verbally agreed, but as she departed she said, "Well, I'll talk with him and see if I can't get him to settle down." The boy at this time had no chance to achieve individuality—perhaps if and when he got the chance it would be too late.

This case and the quotation from Prescott offer several suggestions to teachers. Youngsters from the very beginning of their school experiences should make some of their own choices. It should be realized that chosen

[2] Daniel A. Prescott, *Emotion and the Educative Process*, Washington: American Council on Education, 1938, p. 135.

pursuits are more powerful motivators than are those which are imposed or selected by the teacher. One experimenter intentionally interrupted children when they had partly finished a drawing. She found that while the pupils were disturbed by arbitrary interruptions at any time, they were more disturbed, more determined to go ahead with what they were doing, when they were drawing what they had chosen than when they had been told what to draw (206, pp. 268f.).

As the child attempts to integrate with the world, he must learn, through consistent discipline, the boundaries of his activities and the penalties for exceeding them. It should be realized that motivation is an individual matter. Each child has, by his experiences, become more acutely aware of some aspects of his environment than he has of others. This means that a numberless variety of experiences must be provided in the school if an appeal is to be made to individuals.

It is the consensus of experts that fundamental needs are the basis for motivation. This has been at least partially validated by experimental study, which indicates three basic drives: physical, status, and integrative. Some of the practical and time-honored approaches to motivation will now be examined to see whether they accord with the theory. If they do, the teacher will have a test of the validity of current practices as well as a directional light for his own particular innovations.

MOTIVATIONAL TECHNIQUES IN THE LIGHT OF BASIC NEEDS

Some Basic Considerations. Before discussing further the concept of needs, it should be made clear that it is not necessary to satisfy needs completely. Perhaps it might be undesirable to do so, even if one could, because an individual would then come to a complete state of rest, or homeostasis. At times it seems that human beings are fundamentally perverse by nature. The practical aim for educators is to *approach* the satisfaction of needs or to seek assurance that *needs are on the way* to being met. Unless the child feels that progress is being made toward need satisfaction, he will either fight or flee. He will either manifest overt, objectionable, and disconcerting symptoms or retire into an inner shell of defeat and withdrawal. If, however, progress is being made toward need satisfaction, he will continue to put forth effort.

The study of comparative culture and of individual differences makes it easy to understand why there are so many successful motivational techniques. Some will be more successful than others because they are in closer accord with natural growth tendencies and with progress toward the satisfaction of needs. In this section some common motivational practices will be examined in light of the theory of needs.

Rewards. Rewards may be either symbolic or material. Gold stars, medals, and honor rolls are symbolic rewards. A piece of candy or a sum of money is a material reward. There is no doubt that rewards, by giving status, often impel pupils to greater activity, and, as such, rewards have their place in motivating the pupil in his *initial* contacts with an area of knowledge. It takes contact with a thing, idea, or person to evolve an interest. Many psychologists and educators frown on rewards because they too frequently become ends in themselves. There often is no motivation to continued activity after the reward has been won. If rewards are given, the teacher must be careful to stress to the pupil his newly gained competence, his increased knowledge, and his improved social status. The best reward, however, will be one which is intrinsic in the task. The pupil's reward for reading is the contact with reality through words. The reward of saying, "I can do it," is more effective than the symbolic status of a good grade or a gold star.

Grades and Marks. Many educators disapprove of grading because it partakes of the nature of rewards. But, *wisely handled,* it too can be effective in motivation. If all students are graded on the same basis the criticism is valid. Some pupils will inevitably earn a "respectable" grade too easily and develop habits of superficiality; others will find success so difficult that they will develop feelings of inferiority and discouragement toward their schoolwork. If, however, grades are based on the ability of pupils and if pupils' backgrounds are considered, they can serve the highly useful purpose of informing the pupil of his progress. Such an emphasis is much less likely to result in the grade's becoming the sole objective of learning. The need for status demands that each child shall be judged in terms of what he is and what he can become. The difference between physiological needs of a partially blind child and those of a normal child illustrates the unfairness of uniform grades.

Success. Skill, competence, and success are motives for the continuation of activity. There is sound psychology in the cliché "Nothing succeeds like success." The role of success adds force to the foregoing statements regarding grades. Schoolwork must be sufficiently varied that every pupil has a chance to succeed *at his level.* Success, being determined by the kind of task at hand, can come through a variety of approaches. Providing these varied opportunities for success accords with the need for status and for contact with reality (ego needs). Success builds self-confidence, and self-confident, secure children tend to set realistic goals for themselves (237).

Praise. Praise that is deserved is an incentive to effort at all stages of life. It is not necessary that teachers practice deception in its use. To a very large extent the ability to praise appropriately is a matter of personal orientation. Some teachers chronically find opportunities to criti-

cize, while others take such joy in contacts with pupils that they find it easy to praise. Briefly stated, this orientation is an outcome of knowing and understanding the pupils one teaches. One study indicates that the effectiveness of praise depends on the person giving it (234). Therefore, the manner in which one gives praise or reproof should be studied in terms of its effect on individual pupils. Furthermore, praise must consider individual differences. Some will be commended for relatively minor accomplishments because of their limited ability. Others will be praised only for doing the difficult tasks of which they are capable. Both status needs and integrative needs are fulfilled by the judicious use of praise.

Blame, or Reproof. Blame, or reproof, has also been experimentally studied. The data indicate that it is a positive incentive in many cases. Blame, like praise, serves best when deserved. It is best to use it sparingly. Blame is less effective with slower-learning pupils—perhaps because it is more frequently used with them—and more effective with brighter youngsters (132). Further, there are great individual variations in response to censure. Extroverts react to blame constructively, whereas praise is more effective with introverts (265). This makes it incumbent upon the teacher to know the individual before resorting frequently to blame.

Competition and Cooperation. Rivalry is a potent incentive under certain conditions. Teachers should be careful to stress friendly rivalry rather than that which breeds antagonism. Moreover, competition should involve a degree of equality among the competitors, since the cause of its effectiveness lies in its relation to status and integrative needs. It is not stimulating to either the winner or the loser to compete out of his class. Each individual must have some chance of winning. There are three kinds of effective rivalry.

1. *Personal* competition often encourages spirited activity, but it is not likely to be recommended by psychologists and educators.
2. *Group* competition also stimulates vigorous participation and is more likely to be accepted by educational workers.
3. Competition *with oneself*, with one's own previous record, can be effective, and is highly recommended by mental hygienists.

The fundamental desire for integration with the world, the need for approval, and the need to love and be loved indicate that cooperation is as natural an incentive as is competition. There are those who believe that society is "fiercely competitive" and that children must be taught to compete ruthlessly. As Donald Snygg and A. W. Combs point out, however, no society can afford indiscriminate competition, because cooperation is the main function of society (247, p. 224). The distinction between cooperation and competition is largely a matter of the emphasis the teacher makes. The philosophical orientation of the educational program favors stress on the utilization of cooperative behavior. It is

also favored in psychological theory, because cooperation does work toward the satisfaction of basic needs.

Knowledge of Progress. Experiments on the value of the pupil's knowledge of progress indicate that it is an extremely effective form of motivation. Information about relative or absolute progress is a strong incentive to further effort. Knowing how one is doing in the group of which he is a member gives him a distinct advantage over competitors. In one experiment, fifth- and eighth-graders who corrected their own papers and made charts of progress and were thus immediately informed of results showed marked and continued superiority over those who did not share in this activity (35).

There are many ways in which the teacher may give pupils information about their progress. Grades, provided they are not used solely as a means of final evaluation, can serve this worthy function. Praise and reproof can be used for this purpose. Teacher-pupil conferences have been found particularly effective, especially at the upper-grade and secondary levels. Charts of progress can be used in many subjects. Such techniques are advantageous because they stress continuous evaluation rather than evaluation only at the end of the term. In terms of basic needs, knowledge of progress is justified in the drive to come into harmony with one's environment.

Novelty. Children's need to integrate with their environment leads them to explore and to experiment. Their need for security causes them to appreciate routine and regularity also. Hence, novelty must be introduced in the context of the familiar. A visit to an industrial plant will be more meaningful if the pupils are subject to familiar rules of order and courtesy and if they make the visit in the company of their friends and their regular classroom teacher. "Variety is the spice of life" if the variety is not so pervasive that the child is presented with completely unfamiliar situations. All these factors will be observed if the teacher takes care to point out the relationships between the new and the already known, to use systematic procedures, and to watch the reactions of the children to see that none of them are being too vigorously stimulated. Many previously passive pupils have been spurred to activity by such a remark by a teacher as, "I don't know the answer, and we should know. Katharine, you look it up for us, please." A revival of interest may be generated by some variation in the teaching technique. Incidentally, this may explain many instances in which an experimental technique seems so effective; the variety itself, rather than the technique, is effective.

Level of Aspiration. The concept of level of aspiration, while not a technique of motivation, is an aspect of motivation that deserves serious consideration. This concept explains why pupils who do not understand arithmetic, English composition, or trigonometry "just will not try." It

explains why they will accept help when the goal is almost within their grasp: "I need help on this fourth step." The level of aspiration is intimately bound up with one's feelings of status and with the extent to

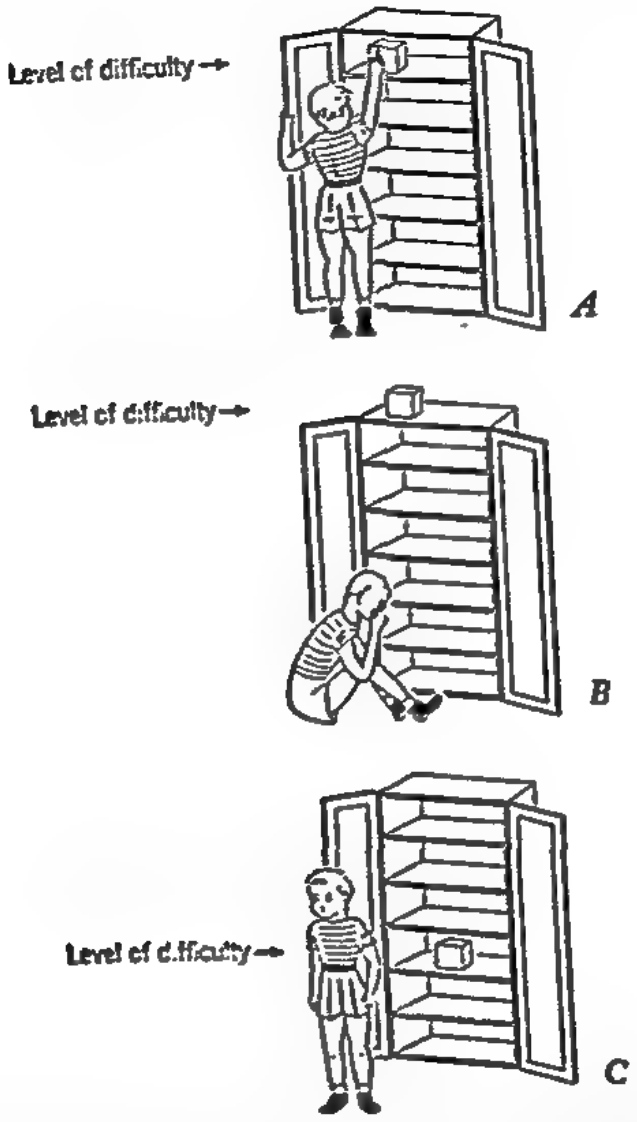

FIG. 5. Level of aspiration. (*A*) By stretching slightly the pupil can perform the task and accepts the challenge presented. (*B*) The task is too difficult in terms of the ability of the child. There is no challenge. Forcing or pressure will cause him to leave the field by running away or by showing such traits as sullenness, anger, and disobedience. (*C*) The task is too easy. The child responds by becoming bored or transferring attention to other pursuits. If he is forced to work at this level, he will do so with superficiality, boredom, and feelings of compulsion.

which he has integrated with his environment. Levels of aspiration are, of course, closely related to such factors as cooperation and competition, blame or praise, rewards, success, knowledge of progress, and individual differences.

The term "level of aspiration" refers to the difficulty of a task or goal the individual sets for himself and toward which he works. The concept is illustrated schematically in Fig. 5. It is not only a motivating factor but a result of preceding motivation. That is, a child will attempt to dress himself if he has experienced some success and praise in previous efforts to do something for himself. A pupil will attempt to make an interesting report in some phase of social studies if he has been successful in previous participation and has developed some familiarity with reference materials. A freshman will attack algebra with confidence if he has found arithmetic within his power to grasp and has used it to solve problems. The teacher is largely responsible for the level of difficulty, but only the child can determine his level of aspiration. In Fig. 5, if pupil *C* were to accept the task indicated, his level of aspiration would be too low in terms of his potential. If pupil *B* were to accept the task, his level of aspiration would only serve to intensify feelings of discouragement and defeat when the inevitable failure occurred.

Three courses are available to the teacher to discover whether or not the pupil has adopted a suitable level of aspiration:

1. Test data will help him form a valid estimate of the child's present potential.
2. The child's behavior will give clues to the suitability of his level of aspiration. If his goals are too high he will be tense and given to strong emotional expression and will find it difficult to be persistent.
3. A study of the child's past behavior (as reflected in case histories and cumulative records) and past performance (report cards) will provide clues for synchronizing ability and level of aspiration.

Teachers must watch closely to see that pupils are not constantly working at or near the frustration level. They must watch to see that pupils do not "get by" simply because they reach age-grade standards. Teachers must plan a succession of developmental lessons that will stimulate each child to work closer to his *presently indicated* level of ability. They must avoid trying to make champions in arithmetic, language, drawing, tennis, or basketball merely because unusual capacity is indicated. Above all, the teacher must try to prevent above-average and gifted children from being satisfied with mediocrity. Appropriate praise, personally significant challenges, the experience of success, and pupil-teacher evaluation can help to prevent the establishment of inappropriate levels of aspiration.

THE CHALLENGE OF DEVELOPMENTAL TASKS

The Concept of Developmental Tasks. Prescott and others who have called attention to basic needs have fanned into flame a revolutionary idea: The pupil's needs are becoming the interest center of educational

activity. In the past, educational psychology was largely treated from the viewpoint of how pupils learn what teachers consider necessary. This point of view is being modified by the concept of needs, which focuses attention on how the pupils look at situations.

Robert J. Havighurst, working with the University of Chicago Committee on Human Development, has given impetus to another stimulating idea (119). His description of "developmental tasks" has permeated psychological and educational literature to a remarkable degree. Developmental tasks have their roots partly in basic needs and partly in the demands of culture. The concept checks the swing toward study of the individual apart from his environment and takes functional cognizance of the fact that that individual must live in a social world. A developmental task is, then, a responsibility imposed by society, which demands more of the person as he grows. That is, more is required of a child than of a baby, and more of an adolescent than of a child.

Developmental tasks are obligations that arise during a broadly defined period of life, the successful performance of which leads to happiness and subsequent successful achievement. Failure leads to personal unhappiness and disapproval by society, as well as difficulty with later tasks. This concept has an advantage over the needs concept in several ways. It indicates the age at which particular needs become most insistent, and it draws attention to the requirements of society. It recognizes the individual's need for freedom and at the same time calls attention to the restraints of society.

Developmental Tasks as Motivation. It is easy to conceive of motivation as something which propels, or pushes, an individual in a given direction. But motivation may also be thought of as something which pulls a person toward a particular goal. Just as a plant growing in a partially darkened room will send its shoots toward the sources of light, so is the human drawn toward a particular objective or activity. This is not a new point of view. It has been referred to in this book in the discussion of purposeful and purposive behavior. The individual is striving *toward* something. It has been referred to elsewhere by the terms "hormic" and "teleological." "Hormic" (*from the Greek word horme*) means "purposive," and "teleological" means "being directed toward an end." Hence, a developmental task is a matter of motivation. It has to do with the drives which are rooted in the individual's growing mind and body; and it has to do with adjusting oneself to the demands of culture.

It is sometimes difficult to maintain respect for individual differences when one is oriented toward basic needs. It may appear that the motive of needs is common to all, but actually we know that not everyone is attracted to the same goal. Again, the concept of developmental tasks helps to maintain perspective. For example, as illustrated in Tables 2 and

3, developmental tasks differ somewhat in the different social classes of the over-all American culture. Teachers must be aware of the varied motives which pupils bring to school. Children from the extreme upper and extreme lower classes are not uniformly drawn to the same goals or moved by the same incentives as those from the middle class. The readiness of a pupil to undertake his next developmental task depends upon his previous experiences. "Motivation" will be a useful tool in the teacher's hand when he realizes differences in native endowment, personal experience, and cultural pressures. Not only motivation but education as a whole is largely a matter of developmental sequence (158, p. 86). This sequence might well stem from a study of tasks.

Developmental Tasks of School Pupils. Developmental tasks may be thought of as forward thrusts in growth. When these are accomplished the person may coast along rather easily on a plateau until his growth brings him to the next rise in his development (119, p. 120). These tasks are presented in Tables 2 and 3.

Many specific educational implications can be derived from these data. The seven tasks of childhood and the nine tasks of adolescence should be studied from the standpoint of such implications. In general, it can be said that the problem of motivation will be simplified when the methods and approaches of the teacher accord with the biological, psychological, and cultural bases of the tasks.

THE GROWTH OF INTEREST

The Nature of Interest. Interest has been defined as the identification of the individual with some person, activity, or object. It is the outcome of experience—not a gift. Yet all too many teachers look only for the presence or absence of interest and condemn the student whose interest is not great. When teachers recognize the importance of *creating* interest they will be able to cultivate it more effectively. Drive is simply a strong interest, indicating the ability of the person to organize his efforts in the consistent seeking of a goal. The energy of drive is partly dependent upon such factors as endocrine functioning, physical strength, and endurance, but it is also dependent on experience which has resulted in some need satisfaction. A pupil's drive is also conditioned by the mores of the group in which he functions away from school.

Interest will result only when the pupil is carrying on an activity which is in accord with his needs. Positive or negative response to forced work can be interpreted in terms of needs. Often the child cannot verbally express his needs. He may not be able to say, "I'm interested in running because I am capable and rested." But running accords with a present drive. When teachers "make the subject interesting" they present the action or study to the pupils in terms of personal orientation (needs).

Table 2 Developmental Tasks of Middle Childhood * (6 to about 12 years)

Task	*Biological basis*	*Psychological basis*	*Cultural basis*
Learning physical skills for games	Growth of bone and muscle	Sanction of peer group	Greater demands made on boys
Building wholesome attitudes toward *self*	Muscles and teeth, etc., condition ability and appearance	Approval of age mates	Some variance between classes regarding habits of cleanliness
Learning to get along with peers	Physique and *skill*	Movement away from family circle	Social activity conditioned by one's class origin
Learning appropriate sex role	Little sex difference in early part of period. Latter part of period shows clear distinctions	Family attitude toward sex and sex role	Class demands differ; *e.g.*, a fighter is admired in lower, tolerated in middle class
Learning to read, write and calculate	*Phenomenon* of readiness	Peak in mechanical skill reached at about twelve years	Widely different attitudes in lower, middle, etc. classes
Developing concepts necessary for everyday living	Mental development necessary to *comprehend* abstractions	Concepts develop from earlier concrete experiences	Some common concepts: space, high, fast. Some unique concepts: nurse, park, travel
Developing a scale of values	?	Identification with parents	Wide differences in "the rules" between classes

* For important details and significant educational implications see Robert J. Havighurst, *Developmental Tasks and Education*, New York: Longmans, Green & Co., Inc., 1952. Data for this table used with permission of the publisher.

Table 3 Developmental Tasks of Adolescence * (Approximately 12–18 years)

Task	*Biological basis*	*Psychological basis*	*Cultural basis*
Accepting one's physique and sex role	Pubertal changes involving endocrines and sex organs and sex characteristics	Marked changes in interests and activities. Concern about normality	Attitudes toward females vary with the current mode and class orientation
New relations with peers of both sexes—to become men and women	Sexual maturity	Dominating importance of group approval	Attitudes toward sex experimentation and age of marriage differ widely
Independence from parents and other adults	Sexual maturity (probably)	Ambivalence: torn between desire to depend on and be independent of parents	Task more difficult in middle than in upper and lower classes
Achieving assurance of economic independence		The desire to grow up, the symbol of which is earning an adult's wage	More easily accomplished by lower class. In general the period of dependence is delayed
Selecting and preparing for an occupation	Adult size and strength in latter part of period	Interest of adolescent inclined toward occupational planning and study	Work is *most* important in American society. Selection difficult in upper and middle, simple in lower class
Developing skills and concepts for civic competence	Adult size of brain and nervous system	Individual differences provide many approaches to civic contribution	Strong expectance in upper and middle class. Little pressure in lower class
Desiring and achieving socially responsible behavior	None	The process of living binds one to his social group	Much pressure from upper class, little from lower
Preparing for marriage and family	Sexual maturation	Attitudes toward marriage greatly influenced by family experiences	Stability of family conditioned by class. Upper and middle class marriages more stable than lower
Building values harmonious with science	None	The more intelligent persons have greater drives toward this task. Conditioned by many experiences	Each society and class is unique. In America upper and middle classes accept and lower classes ignore scientific evidence

* From Robert J. Havighurst, *Developmental Tasks and Education*, New York: Longmans, Green & Co., Inc., 1952. Data for this table used with permission of the publisher.

A classroom experience may serve to illustrate the developmental sequences of interest. A seventh-grade teacher was preparing to teach a unit on China. She brought to class a record of Chinese music, some trinkets, a jewel, a brass bell, some lanterns, and a silk robe. After her oral presentation the pupils were allowed to look at and handle the materials. Many questions were asked, some of which were answered by other pupils and some by the teacher with, "We'll see." Pupils told about Chinese objects they had at home—some had been sent or brought back by older brothers or relatives in the armed services. Plans for developing the unit were discussed, and various projects were suggested. Some of the projects were of a nature that would require considerable reading and research. The difficult projects held the possibility of high grades and were to be presented before the class as a whole. Not all the pupils undertook to do the more difficult tasks. Some were quite content to work on foil facsimiles of jewel boxes. Others made lanterns. The more ambitious pupils read encyclopedias and advanced reference books in preparing reports on the economic and social conditions of coastal China. All the students participated in some way in the final project, which consisted of a Chinese dinner to which parents and friends were invited and at which the local Chinese consul was the speaker.

The author observed this unit on several occasions and was always struck by the sincerity and application of all the pupils. Reference books made available for the unit ranged from those that could be read by average second-graders to those that would have been respectable sources for a college student. Incidentally, on three visits the author noticed the same boy copying a wall chart. According to the teacher, the boy had still not learned to read but found satisfaction in the responsibility for copying a sign that was to be placed over one of the displays at the dinner.

The Influence of Goals. The importance of goals must be mentioned frequently in educational psychology. Goals arise from the more or less clear perception pupils have of their basic needs. Pupils' perception of goals and acceptance of those goals are thus central problems in education.

> Some primary teachers may not consider young children's goals of much importance so far as the teachers' work is concerned. Accordingly, they may, intentionally or unintentionally, ignore many obvious clues to pupil motives. But to ignore motives is to behave in as naïve a fashion as Mary, the third-grade child who insisted, when she first heard of gravity, that she did not believe in it. When Mary rolled past the edge of her bed one morning, gravity operated as well, and the fall hurt just as much as if she had "believed" in gravity. Teachers of young learners as well as older ones, ignoring the importance of pupil motives, also "fall down" as automatically as Mary, despite their assurance that childish goals are of small importance.

> The chief tragedy, however, is that not only does the teacher get hurt in such a situation, but her pupils must share and perhaps bear the main brunt of the consequences.[2]

The author of the foregoing statement continues by asserting that it is sound psychology to place less emphasis on the child's pleasing the teacher and more on the formulation of goals that accord with the child's needs. This involves a knowledge of the characteristics of pupils, their interests, their understandings, and their basic drives. Another effective approach (though by no means a substitute) is to enlist pupil participation. This does not mean that pupils will state their objectives in learning; but it does mean that they are going to *help* state them. Pupil discussion will help clarify goals because they are then started in terms understandable to pupils.

It is also necessary to provide for individual differences in interests and abilities by allowing for a wide variety of goals rather than the single goal of subject-matter mastery. Classroom goals serve the same purpose for children that a philosophy of life serves for an adult. Both are helps in evaluating the relative importance or unimportance of possible activities. Furthermore, both include personal and individual aims and values as well as common and group needs and wishes. Both give direction to ongoing activities.

A philosophy of life is not particularly effective if it is carefully formulated and then filed away in one's memory. Teacher-pupil planning is relatively ineffective if the plans are filed away only to be brought out when a supervisor comes around. There must be daily, or at least periodic, reexamination and evaluation of the extent to which the goals have been accomplished and a plan for the next steps toward the complete realization of the stated objectives. Should any teacher feel that this is a time-consuming process let him answer the question, "How much time is wasted in trying to force pupils to accept teacher goals that are neither understood nor accepted?" The functional recognition of the importance of goals is not easy, but neither is growing to effective adulthood a simple accomplishment.

Individual Differences. The concept of individual differences is one which must be considered at many points in our study. It should, however, be mentioned here that although basic needs are common to all pupils there are differences in their intensity. Needs have been satisfied or are on the way to being satisfied in different degrees by virtue of varied experiences and varied capacities. Needs differ in their intensity at different ages. They also vary with the cultural experiences of the child.

[2] Esther J. Swenson, in *Learning and Instruction*, Forty-ninth Yearbook of the National Society for the Study of Education, Part I, pp. 257–258, distributed by University of Chicago Press, Chicago, 1950.

If the teacher understands differences between pupils, uses materials that are appropriate to the understanding and interest of individual children, and permits each child some freedom for growth toward his unique needs, he will be laying the basis for immediate and effective motivation. But more important still, he will be providing the kind of motivation that repeatedly leads the pupil back to the fountain of knowledge.

SUMMARY

Psychological Principle	*Educational Implication*
Motivation is the basic problem of psychology in education.	Teachers must look for pervasive principles rather than for panaceas.
Motivation occurs within the individual.	Teachers can only set up the conditions which lead to desire and drive.
Physiological needs are insistent in nature.	Motivation requires attention to matters of rest, activity, diet, and sensory acuity.
Lack of status manifests itself in "problem behavior."	Giving each child responsibility commensurate with ability may avert difficulties.
Each child needs to meet and adjust to reality.	Adherence to school rules and regulations is a step toward need satisfaction.
Social acceptance and need for recognition are motivational forces.	Pupils should participate in planning, executing, and evaluating tasks.
Incentives are factors which promote immediate conformity or action.	Incentives should be regarded as passing phases of development—not as ends to be achieved.
Blame and reproof are effective motivators under special conditions.	The nature of pupils and of tasks must be known before blame or praise can be most effective.
Cooperation and competition are both strong motivators.	Use both competition and cooperation, depending on the values being sought on the specific occasion.
Knowledge of progress helps to maintain vigor in the pursuit of goals.	Immediate test scoring and prompt return of papers are helpful, and teacher-pupil conferences and charts of progress should be widely used.
Interest is the identification of the individual with some goal.	Personal meaning must be attached to subject material if it is to become interesting.
The level of aspiration is a goal which the pupil sets for himself.	Providing opportunities for success keeps the level of aspiration appropriately high.
All behavior is goal-seeking, but the more clearly the goal is seen the more powerful is the drive toward it.	A constant emphasis in teaching should be the clarification and acceptance of goals.
Individuals differ in their response to basic factors in motivation.	The teacher's recognition of individual differences is the key to motivation.

PROBLEMS AND EXERCISES

1. Would you agree that attitudes and ideals (motivations) are as important as academic learning? Why?

2. If motivation is a personal and individual matter, what is the teacher's responsibility in the stimulation of pupil effort and activity?

3. How do needs differ from wishes? Is there any difference in their relative strength?

4. Arrange the list of motivational techniques mentioned in this chapter in the order of their merit. Compare your arrangement with that of other class members and attempt to harmonize the lists.

5. What personality traits do you think would be most desirable in a teacher from the standpoint of healthful motivation? What methods would be most commendable?

6. Draw up a list of suggestions for keeping the level of aspiration of sixth-graders at an appropriate height. Extend your list by referring to lists of other class members.

7. Is there any merit in attempting to distinguish between status and ego needs in motivation?

8. Do you think that a formal statement of goals should be written on the board for the pupils? Or would it be more pertinent to make a record of them for each child?

9. Do you think that competition is a more fundamental motivating force than cooperation? Give reasons for your answer.

10. Does the assertion "The key to motivation lies in attention to individual differences" mean that no generalization can be safely made about motivation? Give illustrations to support your answer.

SUGGESTED ADDITIONAL READINGS

English, Horace B., *Child Psychology*, New York: Henry Holt and Company, Inc., 1951, pp. 183–237.

These two chapters on motivation discuss such questions as: Are motives inborn or acquired? What happens when an individual is frustrated? What happens when motives are satisfied? What techniques for motivation can be relied upon?

Havighurst, Robert J., *Developmental Tasks and Education*, 2d ed., New York: Longmans, Green & Co., Inc., 1952.

This book deals with some little-recognized factors in learning, especially the impact of social classes. Biological factors are given unusual recognition. Implications for education are challengingly presented.

Hymes, James L., Jr., *A Pound of Prevention*, New York: New York Committee on Mental Hygiene of the State Charities Aid Association, 1947.

This pamphlet has the subtitle "How Teachers Can Meet the Emotional Needs of Young Children." It describes some of the pressures and problems of children who were "war babies" but demonstrates that the problems are basically the same in any period of time.

Johnson, Elizabeth S., and Caroline E. Legg, *Why Young People Leave School*, U.S. Department of Labor, 1948, pp. 15–24. Reprinted from the National Association of Secondary-school Principals.

This article shows the pull of various factors in very specific terms: failing grades, dissatisfaction with courses, the lure of a job, the view of discipline, and marriage. There are some implications for rethinking the school curriculum.

AUDIO-VISUAL MATERIAL

Motivating the Class, McGraw-Hill Book Company, Inc., 330 West 42d St., New York 36. (18 min, BW, sd.)

How one teacher learned from his own mistaken efforts that it is necessary to know something of students' immediate interests if he is to persuade them to engage wholeheartedly in learning activities.

Unconscious Motivation, Association Films, 35 West 45th St., New York 19. (38 min, BW, sd.)

Demonstrates how hidden motives and repressed experiences can and do influence everyday thoughts, feelings, and actions. It gives meaning to many of the psychoanalytic concepts that have found their way into educational theory and practice.

5

THE NATURE AND COURSE OF GROWTH

As a student today and as a teacher tomorrow, you will find few problems as basic, as pervasive, and as recurrent as that of growth. Your task as a teacher, as it is now as a student, will be to stimulate and direct growth in physique, mentality, emotional control, and social personality.

The study of growth is important for many reasons. It is becoming widely recognized that good instructional practices must be based upon the growth which the pupil has thus far attained. Since human beings have little, if any, predetermined conduct, called "instinct," they must *grow* into the kinds of behavior that will facilitate adjustment. The entire hope of education resides in the fact that the application of psychology to teaching will result in faster, better directed, and more integrated, or balanced, growth. We must learn *to work in accord with*, rather than in opposition to, natural growth principles. Education itself is both a process and a product of growth. Education means growing. Full living for each of us is a process of growing.

Growth, as a psychological term, means more than maturation. Some development takes place solely as the result of inner factors, but in an artificial situation which exists only in a laboratory. Otherwise, growth results from *inner* factors acted upon by environmental influences and reacted to by the individual. Daily living is such a process. Education is such a process. Knowledge and skills are the outcome of and response to capacity and opportunity. It is the task of educational psychology to point out ways in which growth can be facilitated by discovering and describing the conditions which are favorable to growth. Learning is one kind of growth which involves progressive improvement in behavior and which results from experience and maturation. The study of growth is not only basic to the study of learning and teaching—it *is* that study.

THE NATURE OF GROWTH

The word "growth" refers to the phenomenon of progressive development. It is a lifelong process that begins from the moment of conception

and proceeds at varying rates and in different areas until death. All facets of the human organism and personality are involved in this unceasing and permeating phenomenon. In this chapter some of the phases of growth will be examined and generalizations about this fundamental process will be formulated.

Growth Is a Creative Process. Inasmuch as growth involves organization and reorganization it is a creative process. Every act of an organism alters the possible and probable behavior which it will perform in the future. The first steps a baby takes are a development toward his ultimate ability to run. Each word he says is progress toward his ability to converse. As the individual continues to add strength and organization to his activities and as he is guided toward constructive behavior, his potentiality for full, happy, and harmonious living increases.

Growth is a creative process in that the individual chooses those aspects of the environment to which he responds. He puts himself into the surrounding situation. For example, as you read the morning newspaper, you—your intelligence, your previous experiences, your mood—create your own response. In reading the same news items some of you will be discouraged, others will be challenged, and still others will find nothing of importance. Newspapers and books are more than words placed in a certain order. A book includes the meaning which the reader brings to the printed page.

Growth can be slow and tortuous. Its course can be a wandering path. Nevertheless, it is inevitable. If growth is to be made maximally creative it must be directed. "Certainly those who have faith in intelligence will believe that our prospect of getting satisfactory results will be greater if we know what we are about when we undertake this very important task of directing the experiencing of the young." [1] Teachers who understand the nature of growth, including its creative aspects, will be better able to encourage optimum development in their pupils.

The Nature of Physical Growth. Occasionally a distinction is made between growth and development. Growth sometimes refers only to increase in size and changes in function which are the result of maturation. Development then refers to changes which are the result of maturation and experience. The distinction is of academic interest, but the two are so intimately interwoven that they must, for practical purposes, be considered here as a unit.

Physical growth is so intimately bound to development that it is impossible to say how much is due to maturation alone. As an individual grows, he begins to coordinate eye movements. His skill in using the

[1] John L. Childs, *Education and Morals*, New York: Appleton-Century-Crofts, Inc., 1950, pp. 11-12.

thumb in opposition to the fingers increases. He begins to walk without conscious thought to the process. New needs appear as the result of further growth—for example, sex activity in early maturity—while other needs tend to diminish—for example, the need for physical activity in late maturity. The individual's perception of his environment changes as his sense organs grow and develop.

The teacher must be concerned about physical growth for several reasons. A child's stature or a disfigurement may present problems. For instance, in one study of a group of adolescents it was found that during an eight-year period 31 per cent of the boys and 41 per cent of the girls suffered anxiety about physical problems (253, p. 86). Moreover, teachers must know about physical growth so they may judge accurately what can be expected of children of various ages. The child with defective hearing, sight, or mobility presents special problems to the teacher that can be overlooked only at a cost.

The Nature of Mental Growth. Mental growth is not simply a matter of increase in ability. Along with ability to do more things and to do them better occur changes in the way maturing individuals think. More stimuli are comprehended. Not only do interests intensify, but the number of interests becomes larger. The ability to memorize improves because of the increased meaningfulness of the material. More relationships are perceived. Sounder judgments are formed.

Several factors which intimately affect educational procedures function in mental growth. One of these is inherent ability. Two children of the same age learn at different rates and remember with varying clarity. Experiences may act to increase or diminish the manifestations of these differences, but they are there nonetheless. A genius cannot be formed from a child who is born with a mental defect. There is, in short, a great variability in mental endowment. Another factor in intelligence is age. Intelligence grows rapidly in the early years, grows slowly during the teens, and generally reaches its highest point about the age of twenty-five. After the age of forty or forty-five intelligence is thought to decline. Recently, however, it has been said that the alleged decline depends upon what one means by "intelligence" (147). Furthermore, the rate of decline depends upon the use the individual makes of his ability.

Sex constitutes still another factor in mental development. Girls, on the average, talk, develop larger vocabularies, and make longer sentences at an earlier age than boys. Girls make higher scores on intelligence tests than boys, though in some aspects of intelligence (motor and perceptual skills) boys do somewhat better.[2]

[2] Averages do not tell the entire story of sex differences in intelligence. There are more mentally defective boys, but there are also more boys who are characterized as "gifted" (I.Q. in excess of 135 or 145) and who ultimately become geniuses.

The factor in the growth of intelligence of utmost importance to teachers is that of *environmental stimulation.* Teachers can do nothing about a child's innate intelligence (a purely theoretical consideration), about his age, or about the sex of the individual. They can do a great deal about creating an environment which will allow the pupil to capitalize on his potential.

The Nature of Personality Growth. Children are born with varying potentialities for developing social personalities. Mental and physical aspects of personality predispose the child to be optimistic and cheerful, lethargic and stoical, or pessimistic and doleful (241). His rate of learning, his endocrine balance, his bodily strength, and his stature all influence the effect he will produce on others. These factors are quickly and continuously modified by his experiences. The whole family climate and his relationship with siblings and with his parents help to determine, within the limits set by heredity, the manifestation of his personality. Many errors in interpreting personality could be avoided if parents and teachers would realize that personality development, like other phases of psychological growth, is the result of multiple causation.

It is a common assertion in psychology textbooks that the very young child is primarily egocentric. He is concerned with his own wants and needs. He is imperious in his demands. He behaves as if the world revolved about himself. Gradually his social world grows. He begins to see his mother as an extension of himself. He does things that he knows will please his father and his siblings. If normal growth transpires, his interests come to include the welfare and wants of his family group. As he continues to grow he begins to recognize the needs and wants of larger social groups—those of his school and of the community. As his social personality approaches maturity he becomes concerned about the conditions, accomplishments, and welfare of those with whom he has no personal contact. *This is the goal of personality which teachers should* wish to see achieved.

Success in any line of activity depends to a large extent upon a person's ability to get along with others. This means, necessarily, development of the ability to adapt behavior to various situations and people. This important and complicated lesson can best be learned in the school, where contacts are wider and more impersonal than they are in the home. Contemporary educational philosophy recognizes this fact. Hence, a frequently emphasized aim of education is to facilitate social adjustment through direct and specific attention to development of personality.

PRINCIPLES OF GROWTH

The foregoing generalizations about the nature of growth form the basis for a more detailed examination of its process. The *following* prin-

ciples are applicable whether it be mental, physical, or personality phases of growth which concern us.

Growth Is a Product of the Interaction of the Organism with Its Environment. A question which has long engaged the attention of biologists, psychologists, and educators is the relative influence of heredity and environment. Some believe that the important factor is heredity, and others hold for the predominance of the environment. The question is of fundamental import to the teacher. If the view is taken that heredity is the important factor, then it is logical to wait and see what nature has given to the individual. His traits, according to the extreme proponents of this view, will be the result of the maturation of hereditary latency. This, in the author's view, is an unproductive and pessimistic orientation. If, on the other hand, environment is deemed to be the important factor, then an attempt should be made to provide for each child a stimulating environment. If 90 per cent of the personality is due to environment, so much the better. If 50 per cent of the mature personality may be attributed to the environment, there is much with which to work. But if only 10 per cent is due to environment, then we must face the fact that environment especially concerns us as educators.

Of course, the exact proportions of an individual's makeup which are due to heredity and environment cannot be proved. Moreover, heredity can never be sharply differentiated from environment. The two factors operate concurrently and cooperatively. For example, cells transplanted at an early stage to another part of the body become an integral part of the area to which they are transplanted. A skin cell transplanted to the spinal cord becomes not skin but a part of the spinal cord. Apparently the development of a cell is determined both by heredity and environment. It is impossible to believe that the single cell, which is at first the fertilized ovum and later the entire organism, will grow without being influenced by both its prenatal and postnatal environment. It would be best to regard heredity as a potential for development—a factor that sets the bounds beyond which environmental stimulation cannot cause the individual to develop (see Fig. 6). The teacher who accepts this view will be inclined to study the child to determine his present status and how it was achieved. This study can be the starting point for providing him with situations which will be personally stimulating.

Certainly some characteristics seem to be predominantly a matter of heredity—color of hair, facial features, and stature—though stature, within limits, is subject to environmental influences. Orientals reared on the West Coast of the United States are, on the average, slightly heavier and taller than brothers raised in their native lands—though their facial characteristics are still dissimilar to those of white occidentals. On the other hand, language, specific interests, and social behavior seem to be determined by

environmental influence. A Japanese born and raised in American culture speaks and behaves as do his fellow Americans. He will have no oddities of pronunciation or accent. Such observations as these serve to verify the generalization that growth is the product of the interaction of the organism with its environment.

The nature-nurture, or heredity-environment, controversy has perhaps

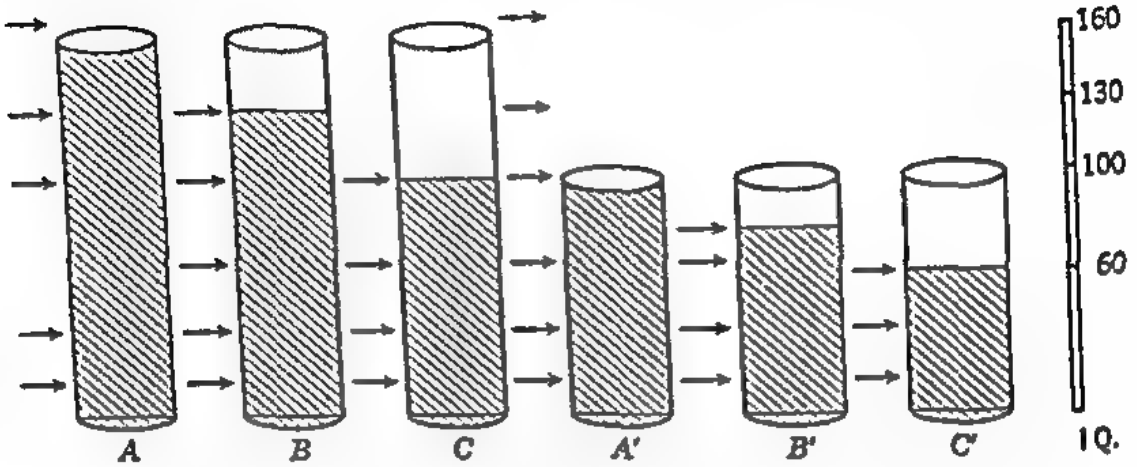

FIG. 6. Schematic representation of interaction of heredity and environment in intellectual development. Let the cylinders represent hereditary potential for development of intelligence (I.Q.) and the arrows represent the stimulating value of the environment. The three left-hand figures show a potential for 160 I.Q., but *B* and *C* with less stimulating environments develop only part of the potential. *A'* has less potential than do *A*, *B*, and *C*, but in terms of the potential the environment is sufficiently stimulating to promote maximum growth. *C'* has the potential for average development (about I.Q. 100), but the poor environment results in a low development of test intelligence. *C* develops average intelligence but in terms of the potential shows low realization. Figures *A* and *A'* show full realization of potential due to *appropriately* stimulating environments, *B* and *B'* high realization of potential, and *C* and *C'* low realization as a result of poor or frustrating environment. The arrows above figure *A'* represent the notion that stimulation cannot effect growth beyond the hereditary potential.

nowhere become more lively than in the study of intelligence. Not long ago the theory that the I.Q. was constant (that is, that the rate of mental development for a given person was constant) was rarely questioned. Recent experimental evidence points to the conclusion that under certain conditions there is a possibility that the I.Q. may be markedly changed by environmental factors (57, pp. 119f.).

There is a hesitancy to accept the view that I.Q. can be uniformly raised for groups of individuals by providing a stimulating environment; testing instruments and techniques currently in use are too inadequate to prove this theory (107). But there are hereditary limitations to the changes a salutary environment can produce. Intelligence is probably in

the greater part fixed by hereditary components but is modified by external factors. The environment determines, to a marked extent, the degree to which innate potentialities are realized and the way in which they are utilized. The more stimulating the environment, short of pressure, the greater will be the realization of the child's capacity (7, p. 35). The stimulation value of the environment is not absolute. For one person, an environment may be stimulating; for another, it may be boring; and for still another, it may be overwhelming. Stimulation is a matter of what one can stand in terms of his capacity.

Recent discoveries about the educability of the mentally deficient indicate the importance of the environment. Teachers would be well advised to cast their lot with the environmentalists, if a choice must be made. Certainly, there is evidence that growth in intelligence, as in other areas of personality, may be retarded or accelerated by environmental factors. The process is one of interaction. It is a matter of the individual's choice (interaction) of those aspects of the total surrounding stimuli (the environment) to which he (the organism) will respond. Here again, the function of the teacher is to understand the pupil in order to help him select those influences which will be of maximum benefit.

Growth Proceeds More Rapidly in the Early Years. In the brief period of nine months, from the time of the fertilization of the ovum, the human organism grows from an almost weightless cell to about 7 or 8 pounds. This is an increase of 500 million times (28, p. 5). In fact, by the end of the embryonic period (the end of the tenth week after fertilization) there has been an increase in mass of some 2 million per cent. Just as remarkable is the growth in terms of differentation. Body parts have become 95 per cent differentiated (legs, arms, eyes, ears, etc.) by the end of the embryonic period. The neural system and the brain have grown rapidly. The brain contains at birth 95 per cent of the cells it will contain, though new cells continue to appear in the spinal cord for two or three years after birth. Body proportions change markedly as growth proceeds in the prenatal period. Thus, prenatal growth is characterized by vast increase in size, gross changes in proportion, and increased differentiation of body parts. "A waggish mathematician has figured out that if the organism were to continue to double itself in size at the embryonic rate, it would be as large as the whole solar system by the age of twenty-one years. It is just as well that this tremendous rush of growth soon begins to slow down." [2]

Although growth does slow down in the postnatal period, it continues at an amazing pace. In the first year after birth the infant is expected

[2] Florence L. Goodenough, *Developmental Psychology*, 2d ed., New York: Appleton-Century-Crofts, Inc., 1945, p. 79.

to triple its birth weight. By the second birthday the individual is approximately half as tall as he will be as an adult. Just as noticeable as growth in size is the growth in independence. The neonate's most striking characteristic is his utter helplessness. This helplessness is, in fact, a characteristic that marks him as a human being. Animals are much less dependent and achieve complete independence in relatively brief periods. Table 4 serves to illustrate this difference and also (right-hand column) to show the amount of growth that takes place from birth to the age of two years.

Table 4 Chronological Table Comparing the Ontogenetic Ages of Similar Developmental Items in Macacus Rhesus and in Man

Developmental items	*Age of appearance in macaque*	*Age of appearance in man*
Crying, sneezing, suckling, winking	1 day	1 day
Response to sound (unadaptive)	2 days	1 day
Head and eyes turn to follow object	3 days	2–3 mos.
Grasp at object seen (visual stimulus)	5 days	5–6 mos.
Recognitive responses to sound	11 days	5–6 mos.
First attempts to walk	12 days	12 mos.
Solid food first eaten	4 weeks	6–12 mos.
Scoops objects with palmar prehension	3 weeks	6 mos.
Opposes thumb and fingers	5 weeks	7–10 mos.
Sustains weight by reflex clasping	0–3 days	0–3 weeks
Plucks pellet (or grain of corn) opposing thumb and fingers	6 weeks	10 mos.
Attempts to draw mother into play	5 weeks	10–18 mos.
Holds head up steadily and gazes about	5 days	3–4 mos.
Follows moving hand with eyes	6 days	3–4 mos.
Attempts to crawl	12 days	8 mos.
Runs (trots)	14 days	18–24 mos.
Weaned	7 weeks	6–12 mos.
Crumpling explorative play with paper	8 weeks	6–9 mos.
Attains virtually all adult vocalizations	9 weeks	12–24 mos.

Source: John J. B. Morgan, *Child Psychology*, 3d ed., New York: Rinehart & Company, Inc., 1942, p. 65.

During the preschool period (roughly from ages two to four years) growth in size is much less spectacular, but psychological growth continues apace. There is remarkable improvement in coordination, perception, differentiation of behavior, and acquisition of skills. Growth in these characteristics is so rapid during this period that even the comparatively uninitiated person can tell the difference between a two and a two-and-a-half-year-old child, whereas it would be exceedingly difficult to perceive

a difference of six months between persons in their twenties. The preschool child learns to feed himself, he develops regular patterns of sleep and can put himself to bed, he learns to dress himself (though buttons, hooks, and zippers may cause some difficulty), and he acquires control over the processes of elimination. Language development continues for years, but the preschool child can make himself understood and can control others through language. He is rapidly acquiring the ability to get along with his brothers and sisters and with other children in the community. He is learning to get along with adults, though frequently adults thwart his desire for independence. He gains some understanding of time and numbers. His fundamental personality traits (cheerfulness, friendliness, volubility, perseverance, etc.) are becoming crystallized. All these developments take place in the short period of four years.

Grade school children continue to grow rapidly, but the more noticeable growth is in further development of skills. A new and complicated skill, reading, a fundamental tool in our civilization, is acquired. Personality traits are further consolidated. Skills in social adaptation are improved.

Growth takes place more rapidly in the early years, but it is important to realize that growth continues throughout life. While it is true that the fundamental traits of personality are established in the first five to eight years, the manifestation of these traits is subject to modification during the life span. Intelligence, in terms of modifiability, plasticity, and retentiveness of the brain, may have reached its maximum development during the first twenty-five years, but the use to which that intelligence is put is a matter of personal concern for those who have reached maturity, middle age, and old age. The fact that early growth is rapid must be viewed realistically but not necessarily pessimistically.

The Effect of Training Varies with the Stage of Maturation. Before training, instruction, and teaching can be productive, appropriate inner growth must take place. The muscles, nerves, and brain must ripen to a proper degree. Some parents may become eager for their child to walk so they can boast to their relatives and friends. They hold the child upright, they place his feet for him, they hold attractive toys before him, and presently he walks. It is likely, however, that the child has had the strength to walk all the time—what he needed was the brain maturation that would enable him to achieve the coordination demanded for walking. Studies of identical twins, in which one twin was given special instruction in tricycling, indicated that the uninstructed twin learned more rapidly than his instructed brother after appropriate maturation had taken place (178). In a study of preschool children it was found that those who were more mature more easily acquired skills in buttoning,

cutting with scissors, and climbing. In the latter part of the experiment the children who were being trained made relatively more progress than they did at the beginning of the experiment, because they were then more mature (127). The phenomenon of maturity has also been noted in toilet training. Those parents who understand the role of maturation and wait until the baby has developed sufficiently discover that the child acquires the ability to keep clean and dry almost overnight.

The role of maturation is well illustrated in the development of reading skills. Experiments, observations, and measurements have established the fact that trying to teach a child to read before he has reached a given degree of maturity is relatively fruitless. Among the characteristics which indicate readiness to read are a mental age of six and a half years, adequate visual power, adequate hearing, emotional control consistent with first-grade level, the desire to read, and a background of experience (293, p. 55). Of these characteristics, only mental age, vision, and hearing ability can be determined objectively. Even though a child is chronologically seven years old, if he has not achieved the mental age of six and a half years he is likely to have so much difficulty in learning to read that he will develop negative attitudes toward reading. If he is far below the necessary mental age he may not learn to read at all; certainly his progress will be slow and faltering. On the other hand, if he has reached the requisite minimum mental age and has developed the other characteristics required for reading readiness, his progress is likely to be rapid and gratifying.

It appears that much traditional arithmetic instruction is begun too early in the curriculum. Experimental investigations show that children who begin to study arithmetic at a later than average age make up any deficiencies that may have existed by the time they leave elementary school. The result of such investigations has been a tendency in recent years to wait until the fourth, fifth, and sixth grades to begin arithmetic instruction (37).

A recent study of arithmetic readiness shows that children must progress through certain developmental stages before they can be expected to participate successfully in number work. A child is not yet ready to do real addition if he counts objects to get a sum. If he must add in order to find the product of two numbers he is not ready for multiplication. This study suggests a pertinent implication for teachers: If the child cannot meet the traditional standards, the standards, *and not the child*, should be altered (135). In short, we must wait for maturation.

A similar need for readiness has been discovered in relation to handwriting. Requirements are, in general, too high. One study shows that a

seven-year-old child is expected to perform about as well as a typical nine-year-old. Manuscript writing is appropriate to the developmental stage of primary youngsters, but the transition to cursive writing should probably be delayed until the age of eight or nine years. Reversals (writing *d* for *b* or *p* for *g*, or writing *s* backwards) can be expected of children five or six years old, and the teacher should avoid making an issue of it (5).

The role of maturation probably plays a less important part in learning as the individual approaches his adult level of intelligence. However, an example of the role of maturation in later learning can be seen in the study of algebra. Experiments indicate that among high school students of equivalent I.Q.s there are fewer failures in algebra when it is studied in the junior year than when it is studied in the traditional freshman year. Though the I.Q.s are equal, the additional years result in a higher mental age, which enables the student more readily to grasp the characteristic abstractions of algebra. Research in mathematics indicates that many high school pupils are not sufficiently mature to study traditionally organized mathematics with profit and recommends that attention be given to proper placement of mathematics in order to allow for pupil differences (297).

Patterns of Behavior in a Given Species Appear in an Orderly Growth Sequence. Growth is not random and haphazard but a regular, step-by-step process. Any skill, trait, or knowledge must have its proper antecedents, and it, in turn, lays the foundation for the next level of growth. The baby creeps before he crawls and crawls before he walks, and the growing child walks before he runs and runs before he dances. He babbles before he says words, says single words before he constructs sentences, communicates orally before he writes, and writes simply before he composes learned dissertations.

The regular and sequential appearance of behavior patterns makes it possible to judge the maturity of a given individual. Not all persons of the same chronological age have matured at the same rate: Some are at one level in the general sequence of behavior patterns, while others may be markedly lower or higher on the developmental scale. Edgar A. Doll has devised a scale[4] for evaluating the social maturity of an individual. Representative items on the scale are listed below to show how growth follows a regular sequential pattern:

[4] Edgar A. Doll, *The Vineland Social Maturity Scale*, Vineland, N.J.: The Training School, 1936. A manual of instructions and explanations of theory and use of the scale is: Edgar A. Doll, *Measurement of Social Competence*, Philadelphia: Educational Test Bureau, 1953. This manual makes the scale a more usable tool for teachers who wish to understand their pupils better.

Behavior item	*Age, years*
Grasps objects within reach	0– 1
Drinks from cup or glass unassisted	1– 2
Puts on coat or dress unassisted	2– 3
Buttons coat or dress	3– 4
Goes about neighborhood unattended	4– 5
Prints simple words	5– 6
Uses table knife for spreading	6– 7
Tells time to quarter of an hour	7– 8
Reads on own initiative	8– 9
Makes minor purchases	9–10
Makes telephone calls	10–11
Is left to care for self or others	11–12
Performs responsible routine chores	12–15
Follows current events	15–18
Has a job or continues schooling	18–20
Uses money providently	20–25
Promotes civic progress	25+

The complete scale has several items for each year, and the composite score is indicative of a given level of maturity. Some persons, for example, will make telephone calls before they make minor purchases, but, nevertheless, the general sequence tends to hold true.

This regular sequential appearance of behavior patterns is the basis for constructing intelligence tests. The Stanford revision of the Simon Binet scale, which has been the standard reference for many intelligence tests for some years; uses certain developmental items to determine the mental development of an individual. Some of the items and the years in which they are usually accomplished are given on the opposite page.

In this scale there are six items for each year after the fourth year, and the individual taking the test is credited with two months' mental age for each item successfully accomplished. It frequently happens that the subject will fail all the items for a given year and accomplish one item among those for the next year. But in spite of such variations sequential development of behavior is generally the case.

Each Individual Has His Own Rate of Growth, and This Rate Tends to Remain Relatively Constant. Some children grow rapidly and some grow slowly. Some reach maturity at an early age, and some never become "adults" in the broad sense of the word. It is as if some traveled by ox-cart and some by jet plane. Some achieve prominence in their teens, others in their twenties, and a few achieve prominence after they have become sexagenarians.

One problem which complicates evaluation of growth rates is the fact that different parts of the organism grow at different rates. A child has many ages: a chronological age, a mental age, an educational age, a grip age, a carpal age, a dental age, a social age, and an organismic age—to

Item	*Year*
Identifies toy cat, button, thimble, cup, engine, spoon	2
Identifies parts of the body—hair, mouth, ear, hands	2.5
Builds a bridge of three blocks	3
Draws a cross	3.5
Identifies pictures of common objects	4
Repeats four digits, *e.g.*, 4-7-2-9	4.5
Forms triangle out of a piece of square paper	5
Copies a bead chain from memory (alternating square and round beads)	6
Points out similarities (wood and coal)	7
Remembers details from a story	8
Copies a design from memory	9
Repeats six digits	10
Repeats sentence from memory (15–16 words)	11
Tells a story from a picture	12
Unscrambles a sentence	13
Solves oral problem of determined difficulty	14
Differentiates between such abstractions as laziness and idleness	Average adult
Repeats six digits presented in reverse order	Superior adult I
Repeats eight digits forward	Superior adult II
Repeats nine digits forward	Superior adult III

Source: Lewis M. Terman and Maud A. Merrill, *Directions for Administering forms L and M Revision of the Stanford-Binet Tests of Intelligence*, Boston: Houghton Mifflin Company, 1937. *passim.* Used by permission.

mention only a few of the discrete phases of growth that have been measured at the present time. A given child will show much variation in these ages, and the older he is the greater will be the variation. Moreover, growth of an individual in some one area may progress on an uneven front. That is, though a child has learned to feed himself, to tie his shoes, and to say "please," he may not give consistent evidence of having learned them.

As stated earlier, the relative growth rates of individuals tend to remain constant. A child who is tall and heavy for his age at two years will *probably* be tall and heavy as an adult. A child who has an I.Q. of 80 at four years will be *likely* to have an I.Q. within five or ten points of 80 when he is fifteen, and one who has an I.Q. of 120 will *tend* to maintain that I.Q. in later years. When growth curves of several children for any one trait are superimposed they tend to follow the same general pattern, and typically there is little crossing of the curves, which represent growth of different individuals (see Fig. 7).

The concave curve (*A*) in the figure represents growth taking place at an increasing rate. The straight line (*B*) represents growth taking place at the same rate each year. A convex curve (*C*) represents growth taking place at a decreasing rate.

Practical implications of this principle of growth are that the dull tend to remain dull and giftedness shows itself relatively early. Delinquency has warning signs in predelinquent behavior (evidence of social and personal maladjustment). The bright second-grade pupil will have a better chance of election to a Phi Beta Kappa than will a pupil who spends two years in the second grade. But let it be remembered that these are tendencies. It is necessary to bear in mind that marked environmental changes

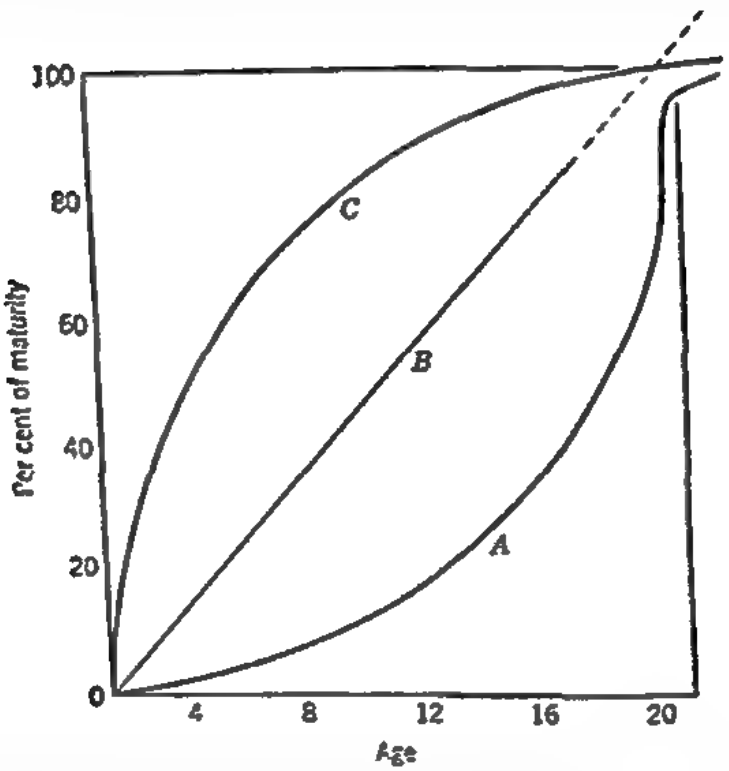

FIG. 7. Some representative growth curves. (*A*), growth of sex organs and sex function (slow initial growth); (*B*), growth in chronological age (uniform rate throughout); (*C*), growth of head, body, or height (rapid initial growth).

may effect a change in growth rate. Further, it is entirely possible that a given individual may be a "late maturer."

Growth Is Continuous and Gradual; It Is Not Saltatory. This is the most encouraging of the growth principles, but it can also be a most discouraging one. Intellectual and educational growth take time, effort, and money, and no magical transformations of personality, intellect, or wisdom can be expected.

A fallacy is involved in the use of the words "stages" or "levels" of growth. If we were to visualize growth as taking place on an inclined plane rather than at sharply demarcated stages or levels we would describe the process more accurately. Childish conduct is the result of gradual development from infancy; adolescent conduct is the result of continuous growth from childhood. It is impossible to draw a sharp line

of distinction between the levels of infancy, childhood, adolescence, and adulthood. Clear differences exist between the mid-points of these various levels, but the borderlines are vague. It is more sound to think in terms of expansion and emergence of traits and abilities than in terms of sudden transformations and distinct levels.

Growth in problem solving, as in physical growth and social development, is the result of continuity of development. Experiments show that children of preschool age are capable of solving problems which require insight. As the child grows, his competence in problem solving increases (204). Increasingly child psychologists are emphasizing the need for providing the child with such a wide variety of experiences that his range of information will be appropriate to his chronological age.

The continuity of growth is further revealed by examination of a growth curve for a given trait in an individual or a group of individuals. Teachers, parents, and you as a student must realize that growth at any "level" lays the basis for, and influences the characteristics of, the sequences of development which follow.

Growth Is a Matter of Both Differentiation and Integration. The process of differentiation in the realm of physical growth is most apparent in the prenatal stage. During the initial days of development, known as the period of the ovum, the baby to be is merely a rounded mass of cells. During the following period (to about nine weeks), known as the period of the embryo, the body parts have become clearly distinguished, or differentiated. During the fetal period, growth is concerned largely with increase in the size of the parts that have already been differentiated. Shortly after birth some teeth have become differentiated, and as age increases certain tissues become more clearly distinguished as bone.[8] The wristbones of a five-month-old child are much farther apart than those of a five-year-old child, and those of a five-year-old are farther apart than those of a sixteen-year-old. Differentiation is seen also in physical action. A six-month-old baby grasps a small object with a sweeping motion of the entire hand. Soon after the first birthday, the object is grasped by opposition of the thumb to the forefinger.

A corollary to the phenomenon of differentiation is that growth proceeds from the general to the specific. This is seen in a baby as his gross random movements are replaced by directed and precise activities. It is seen in kicking, hand movements, walking, and so on. At first even a smile seems to require much activity in the way of squirming, threshing about, and waving of hands. Later the smile appears as a specific action.

Perception develops, in part, through a process of differentiation. That is, stimuli are gradually distinguished from one another. Sensory stimuli

[8] The change of cartilaginous tissue to bone, which is revealed by X ray, is used as an index of skeletal age.

come to have increasingly specific meaning. At first, the infant responds to all persons as if they were "mother," then males and children are eliminated, and still later only a specific woman is seen as mother. Language development during the life span involves differentiation. At first, the child refers to all toy animals as "doggie" or "kitty," then toy ducks and bears are eliminated from the dog concept. The word "dog" is later attached to live dogs. As perception is further differentiated dogs are seen more precisely. Dalmations, Airedales, pointers, and Pekingese are recognized as specific kinds of dogs. Growth in vocabulary is but one illustration of differentiation. The development of skills, concepts, and knowledge is similarly a matter of differentiation and specificity.

Complex responses, such as catching a baseball, are not built from the separate acts of reaching, grasping, and decreasing muscular tension. The total act is involved at the beginning, and only later are the parts of the act analyzed. Pupils learn in much the same manner. Teachers should keep in mind the principle of differentiation in teaching vocabulary and arithmetic, as well as ideals and attitudes, and call attention to details *within a larger context.*

Integration takes place concurrently with differentiation. Integration refers to coordinated, harmonious, and efficient behavior. The skilled athlete in action is an example of integration, revealing its emotional, mental, and physical aspects. He is excited, or at least sufficiently concerned to do his best, he has planned a system or procedure which he thinks will obtain the best results, and he wastes no motion or energy. We see on the basketball floor a player who at one moment is trotting easily and suddenly breaks loose, snatches the ball, leaps in the air, throws the ball through the air and into the hoop, after which he relaxes and lopes to position for the next series of plays. There is no waste movement and little excess energy expended—his actions are integrated. The phenomenon of integration can also readily be seen by comparing an eighth-grade second baseman with a big-league ballplayer. The eighth-grader is tense, he runs hard, he plunges for an easy bounder, he throws with a mighty effort—into the ground or over the first baseman's head. The big-leaguer smacks his glove and relaxes in position. A sizzling liner over the pitcher's head hits in front of second base and bounces over the base. Somehow the second baseman is there at precisely the right moment. He dips his glove and, all in the same series of movements, turns, steps, throws, and the runner is out. Integration means all parts working harmoniously and efficiently toward a planned and specific objective.

Integration is also well illustrated in speech. The baby has difficulty saying a single word—he purses his lips, opens his mouth widely, sticks his tongue out—and perhaps says *something understandable.* Increasing integration over the years may result in his becoming a skilled actor or

speaker, whose words are accompanied by integrated inflections, gestures, and facial expressions.

Frequent mention is made of personality integration. The underlying concept is the same as for physical and vocal integration. An integrated personality is one in which the various aspects of the personality are working in a harmonious and effective manner. One's ambitions and emotions are in accord with his mental capacities, and his objectives are realistically attuned to the required physical energy involved in personal accomplishment. In other words, he has achieved ways of resolving the inevitable conflicts that will occur within himself and those that will confront him as a member of society.

Obviously there are varying degrees and kinds of integration. Conflict is normal and inconsistency is commonplace. The fact remains, however, that the tendency toward integration is a fundamental aspect of growth. It is a driving force toward a goal that is never completely achieved. Viewed from the educational standpoint, it might be advantageous to think of "integrating" as a process rather than of "integration" as an achievable goal or as a characteristic of completed growth.

Correlation,[6] *Rather Than Compensation of Traits, Is the General Rule.* "Unto every one that hath shall be given" is nowhere more clearly shown than in the field of psychology. Despite what we might wish to be the case, and contrary to what is sometimes believed, deficiency in one aspect of the organism or personality is not compensated for by giftedness or strength in another aspect. Although the relationship is not sufficiently uniform to warrant prediction in individual cases, there is evidence revealing a close correspondence among the traits or abilities possessed by any one person. The child who has a high I.Q. will, more often than not, have greater physical strength, be more skilled in physical activities, be taller and heavier, be more resistant to disease, have fewer sensory handicaps, be better looking, and be more socially adaptable than his peer of the same age whose I.Q. is markedly lower (261, pp. 20*f.*). Such remarks as "beautiful but dumb" and "strong back, weak mind" are based either on ignorance or on carefully selected *atypical* cases.

Correlation holds for both personality assets and liabilities. Just as the gifted child has fewer sensory defects than do other children, so too does the handicapped child often have multiple handicaps (156). Crippling is often accompanied by visual and auditory defects. Endocrine dysfunction often accompanies, and may cause, low vitality or low mentality.

There is ample evidence that many teachers think in terms of compensation rather than correlation. Such teachers hasten to recommend shopwork or physical-education classes for the individual who has difficulty

[6] See Appendix I for a discussion of the concept of correlation.

mastering academic work. The pupil who is slow in academic work *may* do well in the shop, but rarely because he has outstanding talent for manual work. His good work is due to the extra time he spends on it.

These remarks do not hold for another kind of compensation. One may compensate for a shortcoming by spending more time in developing that area of personality or action, or by abandoning his ambitions in one area and substituting others. But there is nothing innate or intrinsic in such compensation. It is the exception rather than the rule. For every Edison or Roosevelt there are hundreds of individuals with similar handicaps whose accomplishments are inferior or mediocre. One does not necessarily have great drive or a high level of aspiration *because* he has a handicap.

The principle of correlation can be observed in a visit to any school. The child who is best in arithmetic is near the top in spelling, is popular with his classmates, and plays vigorously and well. The one who is slow in arithmetic is likely to be slow in social adaptation, to experience difficulty in reading and social studies, and to have symptoms of maladjustment. It might be desirous to have it otherwise, but the fact remains that, as regards correlation, there is a tendency for "the rich to become richer and for the poor to become poorer."

SUMMARY

Psychological Principle	*Practical Application*
Growth is a creative process in that it increases behavior variability.	The individual has some responsibility for selecting the direction growth will take.
Growth in *some direction* is inevitable.	The teacher's role is to *steer* growth into desirable courses.
Mental growth is dependent on changed structure *and* experience.	Teachers can do little to improve "brain structure"; they can do much to enrich environments.
Characteristically children are egocentric and mature persons are sociocentric.	The egotism of a child should be seen as a natural factor rather than as a defect to be cured.
Growth is a product of the interaction of the organism with its environment.	Teachers must work with what they have (the organism) and use the environment wisely.
Heredity sets limits for development in terms of potential.	Environment (*e.g.*, that provided in schools) influences the extent to which potential is realized.
Growth proceeds most rapidly in the early years.	Teachers must realize that growth, though less rapid in later years, takes place continuously.
The effect of training varies with the stage of maturation.	Teachers must learn to wait upon the phenomenon of readiness; they must avoid trying to force growth.

Patterns of behavior tend to follow an orderly sequence of appearance.	Children will vary widely with regard to appearance of a trait, but the order of appearance is fairly predictable.
Each individual has his own rate of growth.	Rate of growth is determined by both heredity and environment. Teachers must recognize individual differences.
Growth is continuous and gradual.	Teachers will often not readily see the result of their work, but they can be sure there is a result.
Growth is characterized by both differentiation and integration.	Teachers will help pupils grow by indicating distinctions and by showing relationships.
Correlation is more commonly encountered than is compensation.	Teachers should avoid the fallacies of "beautiful but dumb," "strong back, weak mind," etc.
Education and learning are aspects of growth.	Principles of growth hold for teaching just as surely as for physical growth.

PROBLEMS AND EXERCISES

1. Using for an example the primary child's increase in physical skills, explain how growth is a creative process.
2. In your own experience, can you remember any specific instances in which growth in some facet of your personality has been largely a matter of experience?
3. Of what practical significance is the teacher's view regarding change or constancy of the I.Q.?
4. Why is man ultimately more highly developed than the macacus rhesus when the latter develops so much more rapidly?
5. Why do you think some psychiatrists say that one important source of neuroticism is the average American mother's concern about toilet training?
6. Is there any value in the teacher's knowing the general order of the appearance of particular kinds of behavior (see the Vineland Social Maturity Scale)?
7. Have you known any instances in which a child with apparently no exceptional ability has in later years come to be rather markedly outstanding? Would such an occurrence be in accord with the principle that each individual has his own rate of development?
8. Do the concepts of differentiation and integration have any particular significance for routine classroom procedures?
9. Cite some cases in which compensation, as a method for overcoming a deficiency, might be advantageous. When might compensation be disadvantageous?

SUGGESTED ADDITIONAL READINGS

Freeman, Frank N., and Charles D. Flory, "Growth in Intellectual Ability," in Roger C. Barker *et al.* (eds.), *Child Behavior and Development*, New York: McGraw-Hill Book Company, Inc., 1943, pp. 147–160.

This study deals with the terminus of intellectual growth, with the rate (or form of the learning curve) at various ages and for various abilities, and with the differences between individuals and within the individual.

Havighurst, Robert J., *Human Development and Education*, New York: Longmans, Green & Co., Inc., 1953.

This is an expansion of the author's pamphlet *Developmental Tasks and Education*. He shows that life consists of successive developmental sequences from infancy to old age. Emphasis is placed on cultural factors which shape the direction and influence the speed of growth.

Kilpatrick, William H., *A Reconstructed Theory of the Educative Process*, New York: Teachers College, Columbia University, 1935.

The author states that learning builds structure and hence education is a process of growth. The "laws of nature" present certain dependable expectations which should be capitalized on in our schools.

Olson, Willard C., *Child Development*, Boston: D. C. Heath and Company, 1949, pp. 17–31.

A quick overview of the various "levels" of development, with suggestions for making formal and informal educational programs work with the principles of growth.

AUDIO-VISUAL MATERIAL

Principles of Development, McGraw-Hill Book Company, Inc., 330 West 42d St., New York 36. (17 min, BW, sd.)

This shows the fundamentals of growth, with emphasis on the understanding of basic principles. Intelligence, sex, motivation, heredity, health, and family are shown as growth influences.

This Is Robert, New York University Film Library, 26 Washington Square, New York 20. (80 min, BW, sd.)

This film traces the development of Robert, an aggressive, sometimes "difficult" child, from his arrival in the nursery school at the age of two through his first year in public school when he is seven.

6

RELATIONSHIPS OF GROWTH, LEARNING, AND TEACHING

IT HAS BEEN shown in the previous chapter that growth is a process of continuous change involving related facets of personality. The importance of working in accord with natural growth processes has been emphasized. This chapter presents practical suggestions for improving teaching and learning situations which are based on the principles of growth. These suggestions are directed toward stimulating maximum growth toward goals which are commonly accepted by parents and educators.

PRINCIPLES OF GROWTH AND EDUCATIONAL PRACTICE

Helping Children Realize Their Potential. As stated earlier, heredity sets the limits for development, but environment determines the extent to which limits will be approached. There is no way of determining precisely the limits of a child's development. The many tests of school ability and achievement are measures of the pupil's status at the *present* time, and, of course, his status today is the result of the interaction between heredity and environment. It is the function of the school to provide stimulation which is appropriate for each child in terms of present status and his "indicated" potential.

A teacher has two guides for deciding what kind of school environment will be most effective for a given individual. One of these is test data. The pupil's present status—whether he is a first-grader or a high school senior—can be evaluated by means of intelligence tests, interest inventories, achievement batteries, diagnostic schedules, and the like. If such tests are to be *wisely* used, the teacher's attitude must be to "start with him where he is now." It should be emphasized that test data are merely clues to the present status of the pupil.

The other guide is observation of behavior, which is a symptom of the "inner self" of the child. Teachers know that routine school pursuits are not stimulating to a particular child (perhaps in spite of a high rank on test data) if he is inattentive, spends much time in idleness, teases

his classmates, or devotes his time to activities not in the schedule. Teachers have challenged such pupils by giving them more work to do, by assigning them special reports, and by encouraging them to undertake leadership responsibilities. But no blanket prescriptions can be given for motivating students.

Those pupils whose test data place them in lower categories are often irritable, excessively quiet, or easily discouraged with their present tasks. They may refuse to do the work placed before them and are frequently inattentive and idle. Teachers must learn to experiment boldly and repeatedly until a feasible approach is found. Giving the pupil an easier book to read, praising him for less-than-average accomplishment, delegating to him some simple responsibility (even though he seems not to have earned it) and making tasks meaningful are a few experiments which may have results. One teacher gave a large, over-age, and slow-learning bully self-confidence by making him responsible for playground materials. It was up to him to see that everyone had a chance with bats and balls. He earned status by taking particular care of the smaller pupils. There are similar ways of meeting the individual needs of all children. Such ways are being found in hundreds of the better classrooms.

The principle that growth is a product of the interaction of the organism with its environment has an obvious educational implication. The teacher must help each child achieve the greatest possible realization of his abilities, but not to the point of frustration. Each pupil needs encouragement. Some should be praised for less than the average amount of work; others should be stimulated to read more, write more, and do more problems than other class members. Each pupil needs the experience of success. But pupils differ in background and ability, and unless tasks of varying degrees of difficulty are devised the inevitable result is continued easy success for some and the repeated frustration of failure for others. Each child needs direction. He needs to be steered into areas of endeavor where he can win the degree of success that will merit commendation. He needs to do experiments; to participate in field trips and visits to museums, industrial plants, and the like; to report on independent travels; and to read and ask questions. All pupils need to learn to be good followers, and most of them need experience as leaders in appropriate undertakings. It is in these areas of environment that the teacher's responsibility lies.

The Educational Significance of Early Rapid Growth. The fact that growth takes place most rapidly in the early years is of great importance in education. In the early years the foundations for later patterns of conduct are being formed. Various authorities state that it is in the first five, six, or eight years that the fundamental patterns of behavior are formulated. This means that broad trends in adjustment and orientation do

influence specific behaviors. The idea that responses are *solidified* in these early years and that little change will henceforth take place is erroneous. Change does take place in the later years; but it is important to emphasize social, emotional, and physical guidance, as well as mental development, in the preschool and primary years.

Growing recognition of the school's responsibility for emotional adjustment and social development of its pupils is widely evident (9). Adequately trained teachers of today are first concerned with their pupils' habits of adjustment and then with the acquisition of academic skills, realizing that knowledge which has no place in the child's life experience is relatively sterile. Teachers also recognize that the child cannot or will not learn until destructive emotions have been eliminated. Certainly the interests, the ambitions, the attitudes, and the ideals which the child formulates are as important as formal learning. It is for such reasons as these that highly trained teachers are needed in the primary and elementary grades (232).

The rapid growth rate of children should be recognized but not forced. Thus, for example, the wisdom of beginning school at an early age is questioned by some authorities. It is sometimes maintained that, because of the rapidity of early growth, social experiences on a wider scale than that provided in the home should be begun at the age of three or four years. Others believe that the child should stay in the home longer in order to develop feelings of security and of being loved. A generalization about the problem does not suffice. Individual differences must be recognized. Wide experience would probably be fruitful if teachers were careful not to try to make the immature child fit a pattern of behavior more appropriate to an older child. Opportunity without rigid prescription is the solution that accords with the principles of growth.

Rapid early growth also necessitates concern for the child's health during the early school years. Not only are health habits being formed, but the basis for later health is being laid. While children should be given opportunity for vigorous play and the exercise of large muscles, the danger of overstimulation and fatigue must be avoided. Although children seem to be ceaselessly active, they tire easily because of the immaturity of body tissues and because rapid growth demands large expenditure of energy. Fatigue may result in loss of appetite, low resistance to disease, restlessness and irritability, listlessness, and inattentiveness. Some of the difficulties which teachers have with pupils stem from fatigue. Tired children find it difficult to cooperate, their initiative is frequently low, and their attention span is comparatively short (80). For these reasons, the child must have balanced programs of rest and activity both in the home and at school.

Teachers sometimes feel that so much has taken place in the child's life before he enters the classroom that their efforts are relatively fruit-

as the normal individual is concerned. The adult might well feel sympathy for the child who is faced with many problems that must be attacked with a relatively meager background of experience.

Readiness for Learning. The outcome of training is dependent upon maturation. E. L. Thorndike, in discussing "the law of readiness," stated:

> . . . (1) that when a conduction unit is ready to conduct, conduction by it is satisfying, nothing being done to alter its action; (2) that for a conduction unit ready to conduct not to conduct is annoying, and provokes whatever responses nature provides in connection with that particular annoying lack; (3) that when a conduction unit unready for conduction is forced to conduct, conduction by it is annoying.[1]

This law, almost as old as the scientific study of psychology itself, is all too frequently ignored in the actual teaching-learning situation. Perhaps as the result of required or traditional curricula, teachers try to teach reading, arithmetic, algebra, and social abstractions because the child has reached a prescribed chronological age. The consequence is that much teaching is done at or near the frustration level of the pupil.

Some recognition of the necessity for maturation has been given in the primary grades in the form of reading-readiness programs. Readiness is achieved by allowing time not only for the maturation of mental abilities but also for the maturation that comes as the result of experience. The child must not only be able to learn to read but must also want to learn. A readiness program must generate interest, stimulate eagerness, and cultivate desire. Field trips, visual aids, story telling (by both teacher and pupils), listening games, and experience charts (records made by the teacher of events which the children relate) are techniques involved in readiness programs. Such factors as vision, hearing, and general health are given attention. Thus, an effective readiness program allows for intrinsic growth and through meaningful experiences provides for the development of conceptual background.

It should not be inferred that readiness to learn occurs at a precise point on a scale. A mental age of six and one-half years is not the only requisite for reading readiness. It might be better to think of several types of reading readiness—a time to begin reading, a time to read about things the pupil has not himself experienced, a time to evaluate what is read, a time to appreciate the chronology of history, a time to draw inferences, and the like (29, pp. 51*f*.). It takes time and experience, not merely a mental age of six and one-half years, for full comprehension. This leads to the further conclusion that readiness for one teacher's method of teaching may not be readiness for another teacher's method.

[1] E. L. Thorndike, *Educational Psychology: Briefer Course*, New York: Bureau of Publications, Teachers College, Columbia University, 1914, p. 55.

Unless psychological maturation and its educational parallel, readiness, are recognized and applied, the inevitable result will be frustration for the pupil. ". . . the child's learning must be well within the range of his emotional, social, and physical *readiness*, and not just at the extreme point of his endurance. Learnings which do take place under the latter conditions are usually so suffused with negative attitudes that the learning is emotionally crippling to the learner." [2]

Educational Sequence and Growth. School curricula should be, and to a large extent are, based upon the characteristic pupil-development patterns. It is recognized, for instance, that appropriate activities for children in the primary grades should utilize the large muscles of the body, because children are not yet ready for fine coordination. Large blocks, crates, oversize crayons, and large pieces of heavy paper are replacing the cutting, weaving, and writing activities of an earlier day. The short attention span characteristic of six- and seven-year-olds demands a variety of activities. Children in the intermediate grades are gradually expanding their interests, their writing is improving rapidly, and most of them are capable of mastering some number concepts. Differences between children are becoming more pronounced, and the variety of interests and abilities must be recognized if pupils are not to be frustrated. Children in the upper grades are expanding their horizons in many ways, especially in social activities. They are interested in people and imitate others with sincerity and persistence. Their attention span is longer, and they will like and profit from drill, though they may still have difficulty in working abstract problems. Boys are interested in demonstrating their muscular strength, and both boys and girls are interested in personal appearance.

The adolescent years see merely an expansion and intensification of the growth trends that have previously been noted. There is an increased interest in sex. The expanding social horizons of adolescents make adaptation to their peers more important than their relations to adults. Teachers and parents would do well to recognize this factor and use less pressure in trying to persuade them to conform to adult standards of dress and behavior. Girls spend much time shopping, fixing their hair, and in other ways attempting to establish themselves in their feminine roles. Such interests are recognized in some schools, where classes in "Charm" or "Personality Development" are included in homemaking courses; but all too frequently these natural evidences of development are ignored or even discouraged. It is necessary that growing individuals go through all

[2] *Fostering Mental Health in Our Schools*, 1950 Yearbook, Association for Supervision and Curriculum Development, National Education Association, Washington, 1950, p. 4.

the stages of development; otherwise, according to some psychiatrists, their growth to genuine psychological maturity will be halted. The more rapidly teachers recognize the natural sequences of development the sooner they will give positive assistance to pupils in furthering their wholesome social, emotional, and intellectual growth.

The sequence of development can be used to advantage in many class units, projects, or subjects by starting with pupils' experience and proceeding to the general and abstract. Thus, in a class in government, the teacher might start with local government and the way it affects young people, with visits to community political divisions, or even with problems of class or school-wide government. Study of state and national government would be undertaken after matters that most intimately concern the student have been discussed. Learning which is abstract and remote from the student's experience is likely to be mere verbalization devoid of real understanding and manifested by parroting of statements made in a book.

Lawrence K. Frank, a psychiatrist with remarkable insight into the nature and needs of adolescents, stresses the normality of many of their activities that disturb adults. He affirms the fact that persistent emotions of the adolescent are carried over from childhood as "unfinished business." Often the adolescent has not had the freedom to develop the strength necessary to assume the new and heavy responsibilities placed upon him. The inconsistency of the adolescent is simply his probing for answers. His interest in sex and sex play, far from being abnormal, is a search for reassurance that he is growing and developing normally in this respect. His occasional rebellion against parents is an attempt to grow in independence. He needs the help and counsel of teachers who do not punish and browbeat but who listen attentively. He needs developmental sequences to foster emotional growth, "the great unfinished business of secondary education today" (98).

Lock-step Education and Individual Growth Rates. The problem of individual differences is one of the most pervasive with which the school has to deal. Books on psychology and education constantly reiterate the importance of realizing that children grow at different rates and consequently, at any given time, differ markedly in personality, physical, and mental development. These differences include the various socioeconomic backgrounds of pupils that are soon built into their reaction patterns—differences in family behavior habits, diet, cultural opportunities, ideals, attitudes, and adjustive actions. Other differences are still more obvious—differences in energy output, learning ability, interests, background information, bodily build, height and weight, resistance to disease, temperaments, and physical attractiveness.

A recent study reaffirms what was repeatedly shown by earlier investigations—that pupils leave school because they cannot fit the lock-step methods of education that all too frequently prevail. Pupils drop out of school because they lack interest in school activities. Early school leavers, late school leavers, and graduates all feel that improvement in the schools would result if there were greater opportunity for expressing ideas, if individual interests and abilities were distinctly recognized, and if there were more emphasis on getting along with people (274). Pupils suffer from efforts to place them on the same course of life and to get them to "run at the same pace." The bright students mark time or become bored and disgusted with easy tasks, and the slow ones become frustrated by tasks which are too hard.

Often the teacher who is interested in improving instruction must chart the course. Each teacher in his own way can provide a *variety* of activities in a given class or grade. Often he is able to select reading materials of several grade levels, schedule arithmetic classes in varied degrees of difficulty and type, and scale requirements to the diverse abilities and groupings of pupils with somewhat similar interests and mental development. Most important, the teacher may be allowed to determine the approach which will secure optimum educational growth.

For example, in a project centered around social organization in Mexico the following activities were carried out. Each activity involved one or more students, and only the results of work were brought to the attention of the class as a whole. Students made contacts with a visiting Mexican lecturer by telephone, visited and made a report on Mexican art in the local museum, studied the menu of a Mexican restaurant, borrowed native costumes from Mexican neighbors, made musical instruments from gourds, drew and painted pictures and a mural, ordered books on the topic from the central library, and read and made reports on material ranging from the first-grade books to the *Encyclopedia Britannica.* The culminating activity was to produce a Mexican festival which parents were invited to attend in costume. The project involved committee work, the allocation of individual responsibilities, manual labor, art work, reading, computation, and social and business contacts. The result was meaningful learning. Only two pupils failed to participate readily or wholeheartedly, but they were recent additions to the class. It seemed likely that they would soon find interesting activities suited to their abilities and genuinely educative.

Ability to predict the rate and pattern of growth in individual students is helpful in establishing educational objectives. Moreover, the many measures of growth—mental, physical, and personality—provide the basis for student guidance. High school guidance programs base vocational infor-

mation and training on the relative constancy of growth rates. Such forecasts also help teachers avoid expecting too much of their students and thus reduce frustration.

ILLUSTRATIVE APPLICATIONS OF GROWTH PRINCIPLES

Education Is a Step-by-step Process. It would probably be an overstatement to assert that a particular principle has *the* most important implication for education. But certainly the principle of continuous, gradual growth is worthy of constant attention at all educational levels. Hurry, impatience, and prodding are not in accord with this principle. Educational achievement, vocational prominence, artistic accomplishment, or mere competence in daily living is not achieved overnight.

Teachers must know that they cannot expect sudden transformations of personality in their pupils. At the same time, they can be assured that the expenditure of effort and the passage of time will inevitably show results. If it were possible to see, on the same day, a pupil as he is on the first day of the term and as he is at the end of the term the gain would be apparent. Equivalent tests[3] given at the beginning and at the end of the term will serve the same purpose. Such an approach will help teachers preserve their faith in the educative process.

Pupils in the elementary grades are probably not greatly concerned about growth. High school pupils are generally not sufficiently aware of the significance of this growth principle. Youths need the help of teachers to understand that with the increments of knowledge and the establishment of daily habits they lay the foundations for later competence. Their haste to leave school, to take a job, to become famous, and to establish families must not interfere with their taking advantage of continued *directed* growth.

The lesson inherent in the growth process is one which all people might well learn, whether they be pupil or adult. Many persons are in such a hurry to achieve fame and accumulate fortunes that they fail to achieve the balanced living that is conducive to sound mental health. Yet steady growth is what makes us most acceptable to others and provides the deepest inner satisfactions.

Learning as Differentiation and Integration. As stated earlier, education is a process of differentiation and integration, and these processes proceed simultaneously and interdependently. Earlier it was suggested that teachers should not demand of primary children a high degree of coordination. Such demands may result in tension or nervousness. Teachers can also be continuously helpful in the area of language development.

[3] Equivalent tests may be described as two or more forms of a standardized test covering the same area and having a like degree of difficulty and the same number and type of questions but no duplication of items.

Communication is such an important aspect of one's total living that the precise and selective use of words should be emphasized by every teacher. The differences between "cat" and "dog" and "boy" and "girl" are problems for preschool children. The differences between "surprise" and "astonish," "infer" and "imply," and "healthy" and "healthful" are problems for high school and college students, in whom the process of differentiation is still at work. These are obvious examples of a complex process.

The breakdown of school work into subjects, as an aid to seeing the subdivisions and details of a field of study, facilitates the process of differentiation. However, curriculum makers warn that it is necessary to be on guard lest this breakdown become so specialized that the student fails to see the interrelations of one subject with other subjects and with life. Differentiation should not progress at the expense of integration.

Integration is the process of synthesizing the various aspects of one's physical, environmental, and personality attributes and of becoming a functioning part of social groups. There are several ways of capitalizing on this process in teaching-learning situations. One way to achieve integration in education is to emphasize the relationships which exist between various school subjects. Another way is to organize the subject matter so that the larger aspects of the topic stand out clearly and the details are presented in terms of the larger whole.

Personality integration is of special importance in the learning experience. The teacher must be on guard for evidences of lack of integration, which are, according to E. J. Megroth, (1) inconsistency between professed knowledge (recitation or discussion) and action; for example, a boy states that smoking is harmful, then hastens from class to light a cigarette; (2) failure to apply knowledge in creative responses; (3) acceptance of facts but failure to apply them to one's own experiences; (4) lack of readiness to revise hypotheses, opinions, and beliefs; (5) statements made without corroborative evidence; and (6) condemnation of others for doing that which one does himself (188). Seeing the lack of integration is, of course, only a first step. The teacher's next task is to help the student take remedial action. Some steps that have proved to be effective in accomplishing integration are to help the learner identify himself with the purposes of instruction and to see that he grasps the relationship between present and past learning.

Teachers in the elementary grades and high school must attempt to demonstrate interrelationships in subject matter and to show that data from other subject areas can be used in solving current problems. For example, the teacher can approach current subject matter with some such statement as, "Last week we discussed . . . ." "Yesterday, you will remember, much the same thing was studied." Or "That should remind

you of . . . ." Integration may also be facilitated by using problems and projects as points of departure rather than as ends in themselves.

Education in a democracy is charged with the responsibility of giving citizens a basic core of ideals and attitudes. Social-mindedness, characterized by the ability and desire to cooperate in the improvement of society, has been an ideal of our schools during our entire national history. The school, where experiences can be selected and guided, provides an opportune time and place for developing socially integrated individuals. This does not mean that pupils must study the same thing at the same time and at the same rate. Working cooperatively on common problems will accomplish at least a degree of the desired integration.

To return again to the subject of communication, it may be said that practice in language usage aids both differentiation and integration. One of the major problems of the nation and the world is understanding. Therefore, the study of semantics, which has to do with understanding the other person's referents, is an important facet of education. The practical implications are obvious. Students at all levels must be given many opportunities for exchange of opinion through conversation, discussion, and debate. Here problem and project methods come to the fore. Since additional responsibilities must necessarily be assumed by students as they grow toward maturity, they must be given more opportunity for communication than merely reciting in turn or listening to a teacher outline the salient points of a subject. Further, students must be given an opportunity to become increasingly self-directive, which in itself is a large part of true personality integration.

Certainly the above suggestions do not exhaust the school's possibilities for encouraging differentiation and integration. Both processes should be a concern of the entire school organization, including the teaching philosophy held by the staff, the curricular orientation, and the attitude toward pupils.

Correlation of Traits and the Whole Child. The practical implication of the theory of correlated traits is, like recognition of other growth principles, a matter of knowing how to avoid working at cross purposes to the principle. Teachers should avoid the temptation to steer a child into physical activities, construction exercises, or artistic creation *because* he is slow in the more academic school pursuits. All these activities are essential parts of the education of all children and are properly utilized only when they are part of a balanced program. Each child requires a scholastic program which recognizes him as a "whole child."

Of course, many children have special talents. Alert teachers, for generations, have sought to capitalize on these. While it is likely that traits and abilities will be positively correlated, there is some possibility that a

slow learner may have special talents. Slow learners have sometimes been noted for social talents. The class leader is not always the one who makes the highest marks. The best athlete is not always the outstanding scholar.[4] Pupils with artistic talent often experience difficulty in the traditional subjects. When these talents are noted they can advantageously be used to stimulate the individual to do his best in the areas which are more difficult for him.

It should be reemphasized that chronic illness or fatigue, sensory disorders, and inadequate diet have a direct effect upon the child's behavior and his attitude and ability to learn. For example, both learning problems and disciplinary difficulties have been reduced by seeing to it that a pupil has medical care for defective vision or by improving light conditions and seating arrangements in the classroom. Vitamin therapy and hormone therapy have also been successfully used to help children get the most out of the talents they possess (280, p. 230). Good health, in short, is one of the important aspects of the whole child and is a major concern of the school.

The teacher's attitude toward his pupils is an all-important factor in their development. Teachers sometimes make the mistake of assuming that the larger children in the class are older than their peers and consequently less intelligent. Conversely, a child who is small for his age seems uncommonly bright. The result is that children often develop unwarranted feelings of inferiority or superiority that could be avoided if the teacher took more care in analyzing his pupils.

The Practical Import of Growth Principles. It can be said, in summary, that educational programs will work best when they are designed in accord with basic trends of growth. "Lack of such congruence in school is the cause of major problems of educational ineffectiveness and discipline. Surely it is no dream to suppose that if the processes of growth and education can be brought harmoniously to work together, healthy growth will be furthered, and nature may thus support and further the efforts of education."[5] Such a program cannot be prescribed. Each teacher must have a thorough understanding of basic principles in order to adapt those practices which are most pertinent to his particular situation.

[4] On the other hand, it is a mistake to think that athletes are necessarily poor students. Studies indicate that athletes have, on the average, higher intelligence than their nonathletic classmates. When their time is not taken by training and practice for athletic contests their marks are slightly superior to those who are regularly nonparticipants.

[5] Sidney L. Pressey and Francis P. Robinson, *Psychology and the New Education*, rev. ed., New York: Harper & Brothers, 1944, p. 34.

SUMMARY

Psychological Principle	*Practical Application*
Growth is a creative process.	Give the pupil freedom to explore, experience, and experiment.
Potential for mental development is inherited.	Provide stimulation which is appropriate—challenging but not frustrating.
Growth results from the interaction of the organism with its environment.	Provide the environment which will best help the pupil achieve his maximum potential.
Growth proceeds most rapidly in the early years.	Exercise special care to develop "the whole child" in the early grades.
The effect of training varies with the stage of maturation.	Avoid the temptation to hurry pupils and make too heavy demands on them.
Patterns of behavior in a given species appear in an orderly genetic sequence.	Know the general characteristics of pupils of a given age but do not neglect to recognize the individual.
Each individual has his own rate of growth.	Replace the lock-step method of education by varied and appropriate instruction.
Growth rates for individuals tend to remain constant.	Use indications of the pupil's present status to formulate the educational program which will best serve his probable future.
Growth is continuous and gradual.	Maintain faith in the improvability of behavior by small steps.
Growth involves the process of differentiation.	Help students to see and understand the significance of minute differences.
Growth involves the process of integration.	Provide unifying goals at all levels.
Personality traits in a given individual tend to be positively correlated.	See that each pupil has varied experiences which are appropriate to his level of development.
Generalizations and tendencies are merely probabilities; they are not immutable laws.	See each pupil as a unique individual.

PROBLEMS AND EXERCISES

1. Visit an elementary school and make a list of some typical differences you see between pupils in the first grade and in the seventh grade. What educational import do the differences have?

2. Is it possible that the symptoms of tension in a child who is bored by the ease of schoolwork would be the same as those shown by a child for whom the work is too difficult? What is the significance of your answer for the teacher?

3. Why is it that children do not show the same personality characteristics as those of their parents?

4. If a child has not reached the maturity sufficient for successfully beginning reading should he be kept out of school for another year?

5. What significance is there for you as a beginning teacher in the fact that growth takes place most rapidly in the early years?

6. Readiness is a product of both experience and maturation. What can the teacher do to foster readiness for reading?

7. Evaluate the statement "Adolescence is a product of culture as well as of intrinsic growth factors."

8. Formulate an answer to a teacher's argument: "I just do not have time to know all my pupils well enough to make provision for individual differences."

9. Make a comparison of three or four classmates you know well and by that comparison evaluate the theory that traits are positively correlated.

SUGGESTED ADDITIONAL READINGS

Burton, William H., "The Nature of the Learner," *The Guidance of Learning Activities*, New York: Appleton-Century-Crofts, Inc., 1944, pp. 142–184.

This chapter is an excellent overview of the principles of learning directly related to teaching practice. Maturation, heredity, individual differences, the role of the environment all serve to show the relationship of growth to learning.

Forest, Ilse, *Child Development*, New York: McGraw-Hill Book Company, Inc., 1954, pp. 67–97.

The author deals with children's physical, mental, emotional, and moral development at the time of school entrance. Clear descriptions of differences, and their implications, are given.

Jenkins, Gladys Gardner, *et al.*, *These Are Your Children*, Chicago: Scott, Foresman & Company, 1949.

This book presents a verbal and pictorial summary of the characteristics of children at different ages but warns that "allowance must always be made for individual differences."

Weber, Julia, *My Country School Diary*, New York: Harper & Brothers, 1946.

This is the account of how one teacher did something about individual differences. With over thirty youngsters in eight grades she adapted procedures to fit each pupil. It is an answer to the faint-hearted and a challenge to the ambitious teacher.

AUDIO-VISUAL MATERIAL

How We Learn, Coronet Films, Inc., 65 East South Water, Chicago 1. (11 min, BW, sd.)

A study of the processes of learning involving two components, readiness and materials. A counseling situation shows how the pupils can learn to assume responsibility for developing their own readiness.

Preface to a Life, Castle Films, 1445 Park Ave., New York 29. (28 min, BW, sd.)

The story of Michael Thompson and the four different ways he might turn out, depending on the way his parents treat him in his earliest years. Shows the role of environment in shaping hereditary potential.

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THE NATURE AND COURSE OF LEARNING

THE CENTRAL problem in educational psychology is that of learning. This chapter is concerned with some of the fundamental features of all learning. The contemporary school is concerned with many kinds of learning other than the acquisition of subject matter; for example, habits, attitudes, preferences, interests, social adjustment, skills of many types, and ideals, all of which are parts of the learning experience of every individual. Man's capacity for varying his modes of adjustment to meet the changing requirements of a changing world is a vital factor in education.

THE NATURE AND IMPLICATIONS OF THE LEARNING PROCESS

What Learning Is. We do not know for certain what happens physiologically when learning takes place. But we know a great deal about the conditions under which learning takes place. These conditions and the ways in which they may be improved are of importance to the teacher.

Omitting, for the moment, the physical bases of learning, we may say that *learning is the modification of behavior.* This process involves many changes in perception and behavior. Improvement is usually involved. Learning, like growth, expands the possibilities of adaptive behavior.

In this respect two observations are pertinent. First, not all modification of behavior is learning. Without learning anything new one may be able to lift heavier weights because of muscular development. One may, however, *learn* some "tricks" in lifting without acquiring stronger muscles. The loss of an arm modifies behavior, but the loss itself is not learning. The person may, though, learn to compensate for the loss of his arm.

Second, modification does not necessarily result in improvement—at least in terms of values. Pupils may learn to dislike school, but their adjustment is not improved thereby. Criminals learn to violate accepted legal and moral codes and may become experts at it, but their behavior

is, in terms of values, not improved. With these limitations in mind, we may now define learning as *the modification of behavior through activity and experience* which improves modes of adjustment to the environment.

The Physical Bases of Learning. Learning, as we have seen, is the result of activity. Activity, in turn, begins with the organism. You, for instance, while sitting in a classroom, may give attention to the lecturer's words; you may reflect upon the discussions which took place last night at a meeting you attended; or you may look outside and decide that the weather is ideal for the golf game you are contemplating and lay a plan of play to defeat your opponent. What you respond to depends upon what your *receptors* bring to you from the environment. The receptors include (1) the exteroceptors, which establish contact with the external environment—the eyes, ears, nose, skin, etc. (2) the interoceptors, which maintain contact with the inner environment—the sense organs in the tongue, throat, stomach, intestines, etc., and (3) the proprioceptors, which are located in the muscles, tendons, and joints—giving the sensation of movement and position. Obviously, learning is highly dependent upon all receptors. They determine the nature and limits of contact with the environment, for example, a blind person is unable to establish certain forms of contact.

The *afferent nerves* convey the impressions received to the central nervous system, which is composed of the brain and the spinal cord. It is in the central nervous system that sense impressions are interpreted and sorted out so that appropriate messages may be sent to a third portion of the somatic (bodily) system for learning and adaptation, the *effectors.* It is in the function of the central nervous system that learning becomes an unknown factor. It is assumed that some kind of change takes place as a result of the transmission of messages, but chemical and microscopic analysis reveal no perceptible change.

The effectors are the organs and muscles which execute the acts stimulated by the receptors and the central nervous system. Before certain learning can take place there must be the potential for manipulating or adapting to the environment. Effectors of major interest are the organs of locomotion, manipulation, and speech.

Each of the above-mentioned parts has specialized nerves which make possible the execution of the function involved. The receptors are dependent upon the afferent, or sensory, nerves, which carry impulses from the receptors to the brain and spinal cord. Association neurones are found in the brain and spinal cord and provide the connections between receptors and effectors. The efferent neurones transmit impulses outward to the muscles and organs of locomotion, speech, and the like.

Another aspect of the physical basis of learning is the glandular system. But since the glands seem to be more influential in the development of personality traits than of academic skills, they will be dealt with in the chapter Personality and Its Development.

The Physical Basis of Learning and Educational Practice. Although it is not known exactly what changes take place during learning, it is known without doubt that differences exist among individuals in innate ability to learn. A cretin, a mongoloid, or a microcephalic does not learn with the facility of a normal individual. Less obvious but nonetheless certain is the fact that among children who *appear* to be normal there are also enormous differences in degrees of ability. These differences, which cannot be traced to environment or opportunity, are attributed to basic physiological and nerve-structure differences.

Teachers must recognize these basic differences; otherwise they may try to force all children to learn at a uniform rate and berate youngsters who do not keep up to the class. On the other hand, a child who learns rapidly may become a troublemaker to offset boredom. Hence, teachers should become aware of the symptoms (indifference, failure, boredom, inattention, tantrums, and the like) which indicate that they are expecting too much or too little of their pupils. Pressure can mean trying to make a pupil go more rapidly *or* more slowly than is comfortable for him.

Although it is not the function of the teacher to conduct medical examinations, he should be on guard for symptoms that indicate the need for such examinations. For example, visual difficulty may be evidenced by squinting, rubbing the eyes, leaning forward to see the board, tilting the head, brushing material off the printed page, holding a book very close to the eyes, reddened or watering eyes, and frowning. Hearing difficulty may be manifested in turning one side of the head toward the source of sound, asking for questions to be repeated, failure or belated response to questions or remarks, speech defects, difficulty in group discussions, inattention, and listlessness.

There is evidence that the role of physical disability in learning has not been sufficiently recognized. It is estimated that 80 per cent of the school children in the United States who have such disability are not receiving the necessary attention—yet our knowledge and experience show that many deficiencies can be prevented, remedied, or compensated for.

Besides sensory disability there are many limitations imposed on learning by virtue of glandular dysfunction and dietary deficiency. Hypofunctioning (underactivity) of the thyroid is accompanied by listlessness, lethargy, and varying degrees of dullness. A certain teacher noticed that one pupil had a tendency to be somewhat pudgy, appeared to be sleepy much of the time and had some difficulty in learning. He sug-

gested that the child be given a metabolism test. A slight thyroid deficiency was found, and appropriate treatment was instituted. After a period of time the child became more active and interested in the work that was going on and made better progress in his schoolwork. Of course, not all learning difficulties will be removed by glandular treatment. Teachers should not attempt to be diagnosticians, but they should be aware of the role of physiological conditions. In this respect they have the advantage of being able to observe and compare many children.

American children in spite of being well fed are not necessarily well nourished. Learning difficulties have been traced to dietary deficiency, especially vitamin deficiency. For example, favorable results have been obtained by feeding mental defectives vitamin B_1 (thiamine chloride) and vitamin B_2 (riboflavin). The mentality of the treated individuals was not necessarily increased, but their improved physical status resulted in a better predisposition to learning. Although the evidence of improved mental status from improved diet (including vitamins) is not regarded as conclusive, there is general agreement that there is an improved ability to achieve—a better capacity to do work. A report of experiments with rats conducted at Cornell University connects vigor, longevity, and learning ability with a low caloric but high vitamin, high mineral diet. In this report parallels to human characteristics are convincingly presented (223).

Forms of Learning. There are numerous ways in which the modification of behavior involved in learning takes place. While the following forms are not mutually exclusive, they may serve to show the complexity of the problem with which the teacher has to deal.

1. Development of skills. The baby learns to walk, to eat with a spoon, and to talk. The school child learns to read, to use numbers meaningfully, and to deal with other pupils. The upper-grade pupil learns to use reference books, to deal with abstractions, and to control emotional expression. The adult learns to work efficiently, to cooperate, and to enlarge his repertory of interests.

2. Acquisition of habits. A baby learns to demand a certain daily routine. A school child begins to speak in a characteristic manner. An adolescent is prompt or chronically dilatory. An adult must have his pipe or newspaper at a certain time.

3. Memorization. A school pupil learns a poem. An adolescent learns the names of a group of people. An adult recalls street addresses without resort to a directory.

4. Modification of perception. When one has learned to see more aspects and details of a situation, his potentiality for appropriate behavior is increased. One's perception of a wild animal or bird in the woods is an example—many are unable to see the creature because of its

natural camouflage. A school psychologist will quickly detect the features of a case study which have most bearing on a satisfactory solution, while a beginning teacher might overlook them.

5. Reduction of cues. As one gains experience, encountering one part of a total situation is enough to evoke an appropriate response. This phenomenon is known as conditioning (see pages 128–131).

6. Improvement of insight. When one has coordinated and synthesized the elements of a situation to enhance his understanding we say that his insight has improved. Thus, a mechanic who quickly and correctly interprets certain sounds in an idling automobile engine as indicating fouled spark plugs or clogged carburetor is said to possess insight.

7. Elimination of error. When the tyro cook learns how long to roll a pie crust so that it will be flaky, she has eliminated error. This ability may have little to do with the deftness involved in using the rolling pin, which would be considered a skill.

8. Alteration of emotional response. Experience teaches us that maintaining emotional poise rather than giving vent to anger is of value in converting people to our own ideas or gaining their assistance. Many of the foregoing forms of learning are related to the alteration of emotional response. Development of skills, modification of perception, improvement of insight, and the elimination of error are all conducive to the development of more appropriate emotional reactions.

9. Modification of attitudes and ideals. An important form of learning, which is all too frequently given a minor place in the schools, has to do with views people take of civic responsibility, minority groups, personal responsibility, and support of charities. Yet educational philosophers are agreed that these attitudes may well constitute the more valuable results of learning (56). The same may be said with respect to the goals individuals set for themselves.

10. Solution of problems. This is perhaps a combination of other kinds of learning. It involves certain skills, perhaps routine memorization of certain background data, improved perception, reduction of cues, and, of course, insight. It is considered the highest form of learning and as such adds greatly to the ability to adjust to novel situations.

Other forms of learning might be added to the above list, but the general principle remains the same: Learning involves change of behavior and improvement (if values are considered) and is the result of activity and experience.

Forms of Learning Related to Intent. Learning in any of the above forms may be classified as intentional, concomitant, or incidental. Intentional, or primary, learning is that which is directly sought. For example, the student consciously seeks new information or skill. Inevitably the subject learns more than what he specifically desires to learn. As the

student seeks to acquire the information outlined in a course he is also learning certain attitudes toward work and application, and toward the subject or activity itself. The learner evaluates the school, the teacher, and his own potentialities. This is called concomitant learning—learning acquired without conscious effort. Incidental, or associate, learning occupies a place midway between intentional and concomitant learning. While such learning is not the primary aim of the learner it becomes a secondary aim as pursuit of the primary aim is continued. Thus, a pupil solving arithmetic problems may encounter one dealing with baseball percentages. This stimulates him to read about the history of baseball. A pupil studying social problems may become involved in the study of a particular disease.

Implications for Teachers of the Intent to Learn. It is a matter of common observation, supported by experimental evidence, that a genuine intent to learn is an aid to rapid and permanent learning. When pupils know what is expected of them, when goals are definite, when a personal goal is involved, or when results are apparent, learning is facilitated, effort is more intensive and better organized, understanding is enhanced, and attention is focused on the task at hand.

The intent to learn is influenced by one's level of aspiration. Experimental evidence indicates that one's level of aspiration changes in accordance with his degree of success and tends to be somewhat higher than his present level of accomplishment (see pages 75ff. and 244). However, the goals of individual pupils must be in accord with their abilities. Judgments of their abilities can be at least approximated by reference to test scores and by observation of their behavior and accomplishment in class. Vocational goals of high school pupils should be realistic. Even though we cannot predict with mathematical certainty just what level of accomplishment a given pupil should aspire to, there is little doubt that a *workable approximation* can be achieved. Here again aptitude tests can be of service. The teachers should be able to make sound judgments about whether pupils should pursue a college-preparatory course or concentrate on general or vocational courses. The intent to learn can be intensified when selected tasks lead to the success which keeps aspiration at an appropriate level.

The factor of incidental learning can be utilized if the teacher makes it *more than incidental* in his planning. Among other things, study can be so organized that pupils are given an opportunity to work with different subjects in the solution of problems. For example, in one sixth-grade class a study of traffic problems, begun when a member of the class was injured in a traffic accident, furthered study in arithmetic, civics, geography, social studies, and communications. The class solved arithmetic problems dealing with the cost of safety devices for bicycles and with

salaries of traffic patrolmen; studied local traffic laws and those of other sections of the country; discussed the responsibility of students and schools in traffic safety; and wrote letters to various safety organizations. One letter invited the local traffic department to send a representative to talk to the students about safety on the streets. Thus incidental learning became an important part of the students' education.

Concomitant learning should not be left to chance. Since attitudes, ideals, habits, and predispositions will inevitably be formed, teachers should seize every opportunity to help the student make concomitant learning a constructive phase of his education.

A pupil's attitude toward freedom might well serve as an example of concomitant learning. Because pupils learn from what they see and hear, the teacher should strongly resist attempts to curb his academic freedom. Academic freedom means the right and responsibility to teach what and how one desires as long as he is within legal and moral bounds. Attacks on academic freedom occur periodically; and when such assaults are successful, selected persons or bodies dictate what is to be taught. That is what happened in Nazi Germany, where teachers curbed in their freedom had to teach what they were ordered to teach. Restraints on academic freedom are considered contrary to our national tradition, and therefore academic freedom is a philosophical problem as well as a psychological problem. If pupils are not free to pursue knowledge, to read any or all books, and to ask questions freely of the teacher, the process of learning must be called "training," not education.

The whole problem of concomitant learning becomes more important as the responsibilities of the school increase. When it was deemed sufficient that the school teach its students to read, write, and compute, the concomitants were not considered important. But as it was recognized that ideals and attitudes could be taught and that attitude formation could not be avoided simply by "sticking to the subject," it became more important to study the nature of concomitant learning.

Teachers owe it to their students to bring to their attention these values. They owe it to their students to let them know how they stand on most issues—though they should not impose their own views. There is no need to view as tangential the discussions which lead to an appraisal of values, attitudes, and ideals. They are part and parcel of the educative process. Attitudes will as surely be formed by evasion as they will by planned discussion.

It is especially important that the school experiences of pupils should be pleasant so they will develop favorable attitudes toward work at school and toward the continuation of learning. As teachers we have neither the omniscence nor the time to teach all the things that individuals will need to know in a lifetime. But salutary contacts with teachers

and the opportunity to deal with meaningful situations will serve to make continuous learning attractive. Surely there are few concomitants of learning that are of greater importance than the development of a love for learning.

If it is admitted that the concomitants are an important part of education they should become a central element in developing an intent to learn. If they are left to chance they may be overlooked or underemphasized. At least as far as the teacher is concerned, the concomitants are worthy of recognition and emphasis.

CONDITIONING: A THEORY OF LEARNING

Among the several theories of learning the National Society for the Study of Education has listed conditioning, connectionism, and field theory as the most influential (176, pp. 3f.). Each of these theories has various proponents and interpretations. These sections will be devoted to a brief résumé of the oustanding features of the three theories.

The Meaning of Conditioning. Much learning both in and out of school can be explained by conditioning. Basically, conditioning may be defined as the automatization of behavior by repetition of stimuli which accompany a given response and which ultimately become causes for the behavior which formerly they merely accompanied. In other words, conditioning consists of the substitution of what is called an inadequate stimulus for an adequate or natural stimulus for a given act. When conditioning is established the inadequate stimulus is sufficient to arouse activity. The basic experiment in conditioning was made on a dog, which naturally responded by salivating (R_1) when the stimulus of meat was presented (S_1). A bell was simultaneously rung (S_2) with the presentation of the meat, and after a number of repetitions (twenty to fifty, depending on how well competing stimuli were controlled) the ringing of the bell, without the presentation of meat, was sufficient to cause the response of salivation (see Fig. 9). Thus conditioning consists of a situation which arouses a response because it consistently accompanies a particular activity. This theory gives rise to an important principle of learning, *i.e.*, an organism *learns* only what it *does*.

The Principle of Association. An outstanding aspect of conditioning is association. The principle of association may be stated as follows: "Patterns of stimuli which are acting at the time of a response tend, on their recurrence, to occasion that response." [1] Historically, association was said to be facilitated by the factors of contiguity, contrast, and similarity. Contiguity means that the substitute stimulus must occur at the same

[1] E. R. Guthrie, in *The Psychology of Learning*, Forty-first Yearbook of the National Society for the Study of Education, Part II, p. 58, distributed by University of Chicago Press, Chicago, 1942

time as the original stimulus, or soon before or soon after. Contrast means that stimuli are effective when they differ markedly from other stimuli which have been presented. Thus, response is made more readily to the sound of an automobile on a lonely country road than to the same sound on city streets. Similarity means that stimuli like those which have aroused a particular response are more likely to arouse that response. Teachers utilize this aspect of association when they attempt to point out similarities in various school subjects.

The principle of association has other direct classroom implications. Presentations should have clarity, color, and impressiveness. Clarity means speaking in terms that are within the realm of the child's experience,

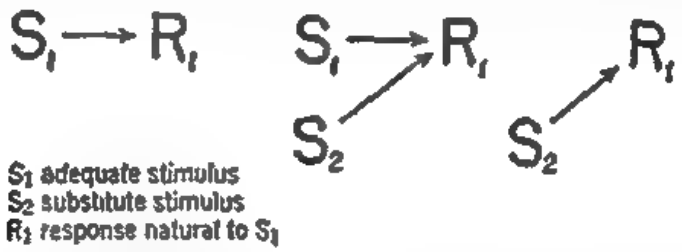

FIG. 9. Diagrammatic explanation of conditioning.

using illustrations that are encountered in children's daily lives, and presenting concrete and tangible examples whenever possible. Color means varying vocal emphases, relating lively anecdotes, and using vivid illustrations. Impressiveness means making use of the unusual. Fast-moving events, the exciting episodes of a child's life—fire fighting, family and class excursions, and field trips will contribute to the element of impressiveness.

The Role of the Organism in Conditioning. If conditioning were made up solely of association, learning would be largely a mechanical process—a mere one-to-one relationship between stimulus and response. However, the organism does not respond in an automatic manner. Stimuli may have one or more of the features of contiguity, contrast, or similarity and yet produce no reaction in the organism. Response is at least partially dependent upon the state of the organism. If the dog is sick, meat may not cause him to salivate. If a child in school feels that, for him, there is no significance in the multiplication tables he may neglect to learn them. There must be some feeling of personal identification with the task at hand. Further, it can be seen that response is not mechanical because of the cumulative effect of stimuli. A school girl standing in line may not respond to the tug given her hair by the boy behind her the first five times; but one more tug may have the cumulative effect of causing her to turn and give a resounding slap to her tormentor. Thus, response is affected by the condition of the organism.

It can be also seen that responses are not mechanical when one considers the phenomenon of forgetting. An individual may forget how to respond. Forgetting is explained in terms of the weakening of old responses by being replaced by new ones. New associations weaken or destroy the connection between original stimuli and responses. Forgetting is thus not necessarily the loss of a function but may be the addition of new ones (112, p. 29).

The theory of conditioning possesses the advantage of highly tangible factors with which to work. It aims directly at the prediction and control of behavior by isolating the conditions which stimulate action. Of course, it must be understood that a stimulus does not occur in simple isolation. Learning consists of the learner's selecting from surrounding conditions that stimulus which is functionally effective. It is this process of selection that gives rise to the need for repetition to develop dependable responses; *i.e.*, the subject must learn which of the stimuli are worthy of response. He needs to select out of the entire situation those stimuli which are directly related to a given situation.

The Implications of Conditioning in Classroom Procedures. We do not expect the theory of conditioning to explain all learning phenomena; nevertheless, there are several ways in which teachers may take advantage of the theory.

First of all, it is well to repeat that the organism learns what it does. The diligence of pupils' work, the sincerity of their effort, carries over into habit patterns. This does not mean that work should be burdensome or unpleasant. It does mean that the teacher should encourage application, industry, and studiousness. As a matter of fact, these traits will result in accomplishment that will be genuinely satisfying. The teacher can encourage such traits by letting students know that certain behaviors are expected and commending students when those traits are displayed.

Repetition is also of great value in learning. Admittedly mere repetition is not all there is to learning. But the fact remains that pupils may understand a poem, the multiplication tables, or formulas in algebra or chemistry without knowing them well enough to repeat them. Practice, drill, or repetition is necessary to consolidate such knowledge. Drill should involve practice in various settings and orders. For instance, drill should be sufficiently effective that a pupil can give the product of 7×8 without having to repeat 7×5, 7×6 and 7×7 before he arrives at 56. Moreover, the drill should be motivated and meaningful, varied and periodic.

Closely allied to drill is review. Review will prevent the initially rapid forgetting that often accompanies learning. The word "review" means "taking another view"—placing the material in a different perspective, relating the facts learned to another problem, and attaching them to the

present lessons. Review should serve the purpose not only of sustaining learning but of attaching new meanings to what has been learned and to provide a transition to new subject matter.

Finally, the teacher must be aware of the existence of conflicting and competing stimuli in the classroom situation. For example, a child may scarcely be aware of a clear, colorful, and impressive situation the teacher has attempted to create because he is concerned about the illness of his mother. His father may be unnecessarily strict with him. High school pupils may be concerned about making the basketball team, getting a part in the class play, performing a part-time job or solving some problem in peer relationships. Books and articles on mental health emphasize that all too often such conflicting stimuli are not properly evaluated by teachers. Some teachers take the attitude that the pupil's inattentiveness is a personal insult and reprimand him accordingly. Though conditioning may be reduced to one stimulus in the laboratory, in the classroom there are always multiple stimuli.

THE THEORY OF CONNECTIONISM

The theory of connectionism is based on the concept that bonds, or connections, are formed between situations and responses. In fact, connectionism is also known as the bond theory of learning. It is related to conditioning in that it utilizes the concept of association but differs in that more stress is placed on the role of the organism. According to this theory behavior begins with reflexes and natural responses and new behaviors result from the acquisition of new bonds through experience. The more bonds or connections formed the more variable is the resultant behavior. Factors which facilitate connections are frequency, recency, intensity, vividness, mood of the subject, resulting satisfactions, similarity of situations, and capacity of the subject. E. L. Thorndike has stated these conditions in what are called the laws of learning, stated below.

1. *The Law of Effect.* Thorndike's early formulation of the law of effect was that when a modifiable connection between a stimulus and a response has been made it is strengthened if it results in satisfaction and weakened if it leads to annoyance. This statement was criticized, and his own experiments indicated that annoyance did not seem to be an adequate explanation for improving responses. Hence, in 1932 Thorndike modified his position (267, p. 311). Satisfaction, according to his new statement, strengthens the connection, but annoyance does not weaken it. Rather, annoyance aids learning in that it encourages the learner to try something else.

Classroom Implications. Implications of this law are numerous and somewhat obvious. Those mentioned here should be considered representative and the student should seek to extend the suggestions.

School experiences of all pupils should be pleasant and gratifying. In order to assure satisfaction the following conditions are necessary: (*a*) a teacher who enjoys his work and his pupils and has good mental health; (*b*) schoolwork and activities which are understandable and meaningful in terms of the personal life of individual pupils; (*c*) schoolwork and activities which are within the power of the pupil to accomplish with some degree of success; (*d*) schoolwork which is progressive in nature and builds on earlier work, thereby giving the pupil an awareness of growth; (*e*) presentation of material in a number of varied approaches so that novelty is provided; (*f*) guidance, praise, and encouragement that brings one satisfaction in knowing he is on the right path.

2. *The Law of Exercise.* This law is made up of two parts: the law of use and the law of disuse. The law of use asserts that, other things being equal, the more frequent a modifiable connection between a situation and a response is made the stronger is that connection. The law of disuse asserts that, other things being equal, when a modifiable connection between a situation and a response is not used over a period of time the strength of that connection is weakened. Many educational practices are justified on the basis of this law—for example, review and recitation.

Classroom Implications. The implications of this law may be summarized by saying that pupils should be given every opportunity to use what they know. Examinations have their place in providing exercise—though they should not be regarded as the sole objective of classroom instruction. Oral quizzes can serve to diagnose weaknesses in teaching procedures and at the same time provide pupils an opportunity to display their knowledge.

Review, as indicated in the foregoing section, provides an opportunity for repetition (exercise) and at the same time places knowledge in new settings. Provided understanding accompanies repetition, the law of exercise justifies the use of drill in various forms. But drill must lead somewhere—it must not pass from isolated fact to isolated fact.

In the modern public school review takes place in a functional manner. Instead of rote recitation, discussions are conducted by pupils which encourage each to bring in his own experiences and to interpret them. Then suggestions are made for modifications in terms of what the pupils have read and heard. Complex controls of conduct, attitudes, and appreciations are aimed at in a varied review of fundamentals. In the classroom and in professional literature a great deal of emphasis is being placed on "discussion, contribution, recitation and conversational method" (45, p. 238). Even at the college level, where the lecture method is most firmly entrenched, it is estimated that the popularity of lectures in the past few years has decreased from about 90 per cent to slightly over 50 per cent.

In the 1920's, so-called "socialized recitation" became popular. This method of recitation sought to reduce the dominating influence of the teacher and encourage democratic, cooperative action on the part of students. Since that time increasing emphasis has been placed on student reports, individual research, group projects, and class participation. It is considered important that all pupils have a chance to contribute; therefore, physical and intellectual freedom have been encouraged. The emphasis on mere memorization of facts has given way to the use, cross-use, and interpretation of those facts. This practice accords with the findings of research, which indicate that the ability to apply principles or interpret new experiments is not lost over a period of one year but that the ability to recall memorized items or information is largely lost in the same period of time (275). Drill should not be repudiated, but it should have a purpose which pupils comprehend.

Particularly at the elementary level, school problems should have personal meaning for the pupils. It is for the solution of problems that instruction in the school is provided. Therefore, it is entirely appropriate that exercise be provided in the area in which information is ultimately expected to function. The law of exercise is thus supported both by educational psychology and by educational philosophy.

3. *The Law of Readiness.* This law is related to the law of effect. It is also related to maturation, a relationship which is clarified when we refer to the concept of reading readiness. It has been found that if, among other requisites, a child has reached the mental age of six and one-half years he is mentally capable of learning to read. If he does not have the requisite maturation the experience of trying to learn to read will be annoying and frustrating. Another requisite, of course, is mental set.

One may be mature enough to learn to read, or to perform any other act, but lack the mental set to do so. The more or less permanent condition of readiness should not be confused with the temporary condition of mental set, which is dependent upon interest, pertinency, or timeliness.

Classroom Implications. The factor of readiness is widely ignored. This fact is shown by teachers who ask, "How can I teach numbers (or spelling, algebra, or history) to pupils who have low I.Q.s?" or, "How can I bring up the slow learners to the class average?" At least part of the answer is to be found in the concept of readiness. Teachers must either wait for readiness or accept the present level of readiness and be satisfied with a slower learning rate. Teachers must realize that some students may never reach the level of readiness that will enable them to comprehend the abstractions involved in certain school subjects.

As stated earlier, innate potential influences maturation. Individuals react positively or negatively and in varying degrees to their potential and

opportunities. For example, parents or siblings who read to a child may make him "ready" for reading sooner than another child with the same maturation whose parents have not acquainted him with books. On the other hand, as a children's librarian recently asserted, some children have had their appetite for reading spoiled by having too much read to them.

Educators are today strongly advising that a child not be forced "beyond his depth" in reading, arithmetic, or social activities. No doubt some children are taught to swim by "tossing them in the deep end"—but frequently at the expense of their disliking swimming. A pupil who is forced to read before all elements of readiness converge may acquire some manner of reading skill but also the attitude that he will only read when forced to do so. Very recently an experienced teacher said, "But I just can't let him go on this way in reading any longer—he's eight years old." This nonreading lad had a mental age of about five years on a group test of intelligence—eighteen months below the mental age considered necessary for reading readiness. It is a difficult problem for teachers to recognize the wide differences in readiness, but failure to do so will result in futile effort.

Capitalizing on the principle of readiness is not necessarily a matter of passive waiting. Preparatory experience can be provided that will hasten the growth of readiness. Thus, the primary teacher reads and tells stories to his pupils, encourages them to look at picture books and tell stories about what they see, and takes them on excursions and records the results on experience charts. Since readiness for reading consists of more than book experiences, he encourages group play and the exercise of independence and praises emotional control.

There are aptitude tests in various subjects that can be helpful to teachers in determining the thoroughness of preparation for those subjects. For example, there are mathematics, English, chemistry, language, and mechanics aptitude tests, and, of course, general intelligence tests—all of which will provide partial answers about the probable success of students. Correctly used, such tests should help the teacher avoid the bewilderment and frustration that results from starting students in various subject areas simply because they have reached a certain grade or chronological age.

The three above-mentioned laws are the primary laws of learning. In addition, five supplementary principles are included in the theory of connectionism.

1. *The Principle of Multiple Response.* This principle, also known as the principle of varied reaction, means that many responses may be tried before a satisying one is hit upon. As learning takes place useless parts of an act are dropped and efficient, coordinated action ensues. This is one

justification for guidance of learning experiences: The teacher can point out pertinent clues and indicate fruitless responses.

Classroom Implications. The significance of multiple response for education is the desirability of giving pupils an opportunity for wide experience, a chance to experiment for themselves and learn from their own errors. Art teachers have been among the first to utilize this principle. They are moving away from stereotyped teaching methods and are encouraging children to select their own art media, to choose their own subjects, and to experiment with their own techniques. Help is provided when it is requested or when a pupil makes a gross error; but there is an increasing realization that experience, including the making of errors, is educative.

2. *The Principle of Mental Set.* Mental set refers to the attitude of the learner. Response to an external situation is dependent upon the condition of the learner. A child may be *ready* for the experience of reading, but at the time the teacher is prepared to give instruction he may not have a favorable mental set. If he has just returned from an exciting game of football or tag, or if three fire engines have just roared down the street, he may be in no attitude to give attention to reading. Regardless of the neural processes that occur in learning there can be no doubt that the principle of mental set is of prime importance at all levels.

Classroom Implications. There are many ways to utilize the principle of mental set. One of the most effective is to relate school activities to the ongoing life of the pupils. Teachers can capitalize on school events, anniversaries, and outstanding community events to orient the student to the daily lesson or the new unit. Pupils of high school age (and often younger) are likely to be reading at least the newspaper headlines. Events which they encounter thus, and which are often discussed in the home, can provide a convenient orientation point for learning activities. For example, one elementary school teacher used the community dairying industry, which was currently being discussed in the state legislature, as the point of departure in teaching geography and social studies.

It has been shown that the emotional atmosphere of the classroom is an important factor in mental set. If the teacher is happy and congenial the attitude of his pupils is likely to be positive. An attempt should be made to encourage congenial attitudes and cooperative relationships between pupils. This can be done by openly discussing strong and weak points in such relationships. The meaningfulness of the schoolwork is a powerful determinant of mental set. Even youngsters in the elementary grades have criticized the meaninglessness of preparing scrapbook after scrapbook when the only result they can foresee is a grade.

Mental set is a problem for individuals as well as for the class as a whole. The temporary disappointments that every individual suffers have

a negative effect upon the mental set for learning. A junior high school girl with an I.Q. that placed her in the superior classification was failing in part of her work and was causing a disturbance by fighting with boys. Her mental set was changed by a teacher who sought the cause of her difficulty. The teacher, in talking with the girl, discovered that she was embarrassed by the lack of a front tooth and a protruding abdomen. Help was secured from a charitable organization to defray the cost of a new tooth, better clothes were obtained, and the teacher taught the girl some pertinent aspects of personal grooming. The girl was objective and accepted the teacher's explanation that a protruding abdomen was normal in preadolescence. The transformation of attitude seemed miraculous. The girl's grades quickly improved, she was able to laugh at the boys who made fun of her, and soon she had a substantial corps of friends. Pupils have been known to develop favorable attitudes toward learning merely by virtue of their knowing that the teacher is concerned about them and desires to be of assistance.

Finally, it is necessary that the teacher set the stage for learning. This he does by knowing about events that are important to students and about their group and individual interests.

3. *The Principle of Partial Activity.* This principle means that a response is not made to a total situation but only to parts or aspects of the total. Part of a total situation may be prepotent in the determination of a response. Thus, a baby will respond to its mother whether she is in night robe or evening dress, whether she is at home, on the street, or visiting with friends. A pupil will respond to the number combination 3×4, if he has learned it, whether he sees it in a book or his teacher or his father asks him for the product. This is an economical factor in learning because it means that appropriate responses can be made without exact duplication of an entire situation.

Classroom Implications. Since a response is made to parts of a total situation it is advantageous to present data in a number of settings. Facts about health, economics, or mathematics should be utilized in the solution of various problems. An attempt should be made to discover which stimuli are prepotent for children of a given age level. For example, it is known that primary children are more interested in the process of doing than they are in the result of their activity. Older pupils can better understand abstractions, but they too need help in seeing what they learn in many contexts. Just as you desire to fit the facts of educational psychology to many problems and situations, so pupils in school profit from seeing the data with which they deal used in numerous situations.

4. *The Principle of Analogy, or Assimilation.* This principle asserts that when an individual is faced with a new situation for which he has no natural or learned response, the response he makes will resemble an

earlier response to a similar situation. The new situation tends to arouse more or less the same structure activated by the earlier situation.

Classroom Implications. The principle of analogy again stresses the need for pointing out the similarities between the new and the old. It stresses the importance of leading from the known to the unknown in everyday teaching. It emphasizes the significance of bringing to life textbook abstractions by relating them to the experiences of the learner.

This principle is of far-reaching importance. Schools cannot hope to prepare pupils for all the experiences they will later encounter. But schoolwork can provide for students a basis for assimilating later experiences in a healthful manner if equivalents, similarities, and parallels are indicated in the course of instruction. Teachers who point out similarities between historical events and present-day happenings are helping to produce understanding and responsible citizens. Special economic and social problems in the community will resemble problems described in texts and references, and these parallels should be presented to the student.

There are many justifications for the unit approach in teaching. The principle of analogy is especially applicable in this method, since the unit will reveal a "wholeness" which is akin to the problems encountered in adult life.

The units studied in high school and elementary grades are not unlike the survey courses used in some colleges. The basic purpose is to draw related knowledge from various fields. The unifying factor may be a problem, an era of history, or a trend in scientific development. At any rate, it is the common point of reference that gives cohesiveness to the study. The unit generates a large, related body of subject matter which cannot be covered in a day or in one lesson. Therefore it is doubly important that students perceive relationships.

Obviously, problems are perceived and solved in life in this manner. One cannot solve taxation problems by studying only the problems of road construction. Nor can problems of taxation be perceived clearly without narrow and intensive study of related subjects, such as economics and sociology. There is the dual need of seeing a situation in its larger perspective and of studying the contributions which can be made by separate subjects. This is the purpose of the unit method. The principle of analogy is simply the psychological explanation of what has been pragmatically tested. It has been shown, for instance, that pupils who actually participated in student government made better suggestions for improving their government than students who had no such experience (290, p. 83).

The addition of other psychological principles to the unit idea leads to the "experience unit." This term denotes a unit of study which stems

primarily from pupil experience. By this approach better assimilation (or perception of analogy) is sought by emphasizing that for every individual the only reality lies in what he sees in the objects about him. These objects have different meanings for various persons (153). Here again it is recognized that superior learning takes place when the task contributes to ends which have value for the learner. And finally, from the democratic point of view, personal growth, *i.e.*, pursuit of one's own goals, is synonymous with social progress. The experience unit, then, is psychologically sound, from the standpoint of learning efficiency, appeals to the individual (motivation) and is productive of social values.

The wide scope of the unit approach and its emphasis upon individual experience promote perception of cross-relationships and encourage observation of parallels. Instead of working at cross purposes to psychological principles—as does the fragmented method of daily assign-study-recite technique—the unit is justified by the principle of analogy. (Incidentally, your study of educational psychology will be more interesting and meaningful if you will attempt to trace parallels between your own school experience and material in the textbook and class discussions and if you will vitalize your learning by making frequent visits to classrooms to test the validity of what you learn.)

5. *The Principle of Associative Shifting.* This is in reality a formal statement of the principle of conditioning. It means that any response of which a learner is capable may be attached to any stimulation to which he is sensitive. Among the many illustrations of this principle may be cited the phenomenon of reading. The letters *h-o-r-s-e*, in proper sequence, come to mean a specific thing. Associative shifting may go even further, and some letters come to mean a device to hold wood while it is being sawed or to refer to doing a thing by brute force.

Classroom Implications. The habits, attitudes, and interests which children develop in the school inevitably form the working equipment with which they will perform their functions in society as adults. Among the more important phases of conditioning must be included a positive attitude toward school and continued learning. Everything the teacher can do to make learning successful and gratifying will contribute to this desirable type of conditioning. A healthy respect for objective viewpoints, supported by reliable data and systematic methods of research, can be created by the teacher who commends those traits in his pupils. For example, one who forms time-place study habits, will find it easier to overcome the inertia that hinders academic efficiency. If school children habitually are ready for work when they enter the classroom much time will be saved.

Conditioning does not operate independently of other principles of learning. Some of the factors which operate together to produce effective learning and desirable conditioning are: pleasurable after-effects, consist-

ency in the program, recognition of the necessity for readiness, guided activity, attention to temporary mental set, knowledge of the most compelling aspects of a situation and the desirability of indicating similarities.

It can be seen from the foregoing that connectionism has very practical implications for teaching. Whether or not teachers are acquainted with the term, the fact remains that connectionism has played a dominant part in educational practice for the past forty years. In fact, the theory is so pervasive that many consider it to encompass the entire field of psychology. Furthermore new elements continue to be added to the theory and the principles are still regarded as incomplete (233, p. 111).

FIELD THEORIES AND LEARNING

The Molar Emphasis. Field theories of psychology have been formulated in reaction against what is sometimes considered to be the atomistic

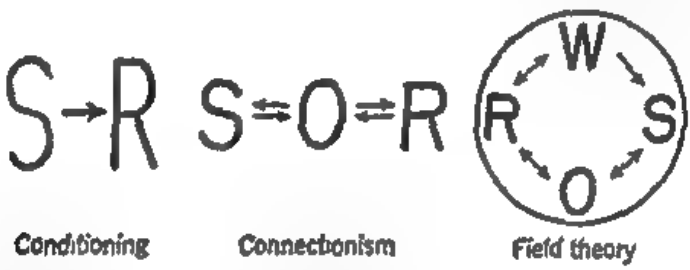

FIG. 10. Schematic representation of major learning theories. (*S* indicates stimulus, *R* response, *O* organism, and *W* world.)

nature (*i.e.*, giving too much attention to supposedly isolated details) of conditioning and connectionism. The atomistic approach is sometimes called the molecular view—stress on minute detail and component parts. Field theories, by way of contrast, endorse the molar view, which maintains that all parts are intimately interrelated and interdependent. Emphasis is placed on the total organization of the "field," which is made up of (1) the occurrence of many stimuli, (2) these stimuli assembled into a meaningful pattern, (3) the reaction of the organism, which alters both the external situation and the organism and (4) the organism itself. This difference is illustrated schematically in Fig. 10.

Field theories emphasize the phenomena of perception and organization. They stress the fact that a stimulus never occurs in simple isolation—there are always competing stimuli and shifting conditions. Thus, in Fig. 10 the double arrows indicate that the organism selects *out of the total situation* certain stimuli to which it will react, that what it selects *changes* the organism, and that a reaction is not only a product but becomes a force in *changing* the world.

Field theories offer no simple explanation of learning processes. In fact, oversimplification in explaining those processes disturbs the field theorist.

Learning, according to this view, is the organization and reorganization of behavior which results from the many interacting influences on the developing organism acting in its shifting environment. This will be seen more clearly in an analysis of some of the concepts utilized in this theory.

Gestalt Theory. One of the leading field theories is Gestalt psychology. The word "Gestalt" means shape, form, or configuration. In this context it implies that a set of stimulating circumstances takes shape according to the relative value of various stimuli acting at the same time. A musical pattern is not dependent upon *c, d, e, f,* etc., alone, but also upon the relationship in time and sequence that the notes bear to one another. The same notes may be used in "Annie Laurie" and "Yankee Doodle," but the timing and sequence give each piece its distinction and configuration.

Configuration is partially dependent upon "figure-ground." Some stimuli are prominent while others constitute the fringe or background. Typically the figure is clearly outlined, small, and well-shaped, while the ground is vague, relatively massive, and amorphous. Thus, in a large landscape painting the red barn, though small, is the figure. The organism has a part in the perception of the figure.

Classroom Implications for Field Theory in General. Field theory stresses the importance of seeing the total situation at the beginning. This is accomplished by having pupils discuss both the immediate and ultimate goals of learning. Questions should be raised that will be answered during the study of the subject. The teacher should pre-view the activities involved and the problems to be encountered. However, details should not be ignored; they are important as *aspects* of the larger problem. For example, in primary reading the teacher will tell briefly what the story is about, describe the characters, and relate the story to the pupils' experience. At the high school level, instead of introducing the study of chemistry with a detailed analysis of a given element, the teacher should first discuss the operation of chemistry in daily living, the over-all field, and the problems to be considered.

The pupil, the teacher, the school, and the peer group are all parts of the total situation, which also includes the present and previous reactions of every individual in the class. Thus, the pupil's intelligence, his background, and his interest in the subject must be known before the total situation is comprehended.

The Figure-ground Concept and Its Implications. As briefly indicated above, figure-ground means that in any perception, whether sensory or mental, some aspects of the total scene are predominant and stand out with clarity. Other parts form the setting. A deer standing on a ridge in the early-morning sunshine is clearly perceived as figure. The dew on the leaves and the dark evergreens make up part of the background, the

rest of which is distant mountains, topped by thin clouds, and sky. It takes the total to make the scene, yet the sharply outlined deer is the focus of perception.

The situation has many parallels in classroom efficiency. Teachers must try to understand a particular pupil by studying and interpreting his behavior. Why the pupil acts as he does must be an ever-present concern. But when teachers are caught in the pressing problems of the moment they often forget the total context and regard laziness, slow learning, boredom, or discourtesy as if those were the sole concern.

The figure-ground concept stresses the importance of clarity of explanation and demonstration to make the most significant points stand out. This necessitates the use of distinctive, understandable vocabulary, pictorial and auditory aids, and direct experience. Broad generalities have their place in introducing the subject area, but out of these should come preciseness and exactitude of description. The figure-ground concept demonstrates the necessity for seeing the whole, but also for observing the details. Thus, in reading, the teaching of word analysis and phonetics is subsidiary to the importance of getting the idea. Word analysis and phonetics are of significance only as they contribute to better understanding. Experienced teachers know that there are many pupils who can read the words but fail to grasp the meanings. The figure perceived depends partially upon the experience and background of the learner.

The Concept of Tension and Its Implications. Action always begins with the organism. The pupil must have a desire or need to achieve the learning goal. This creates tension that causes action toward the goal. After the goal has been achieved the organism returns to a state of repose until a new desire or need creates another condition of tension. Thus, in field theory the organism is quite as important a part of the total configuration as is the patterned set of stimulating conditions.

Several important applications arise from this concept.

1. The teacher must help the pupil to perceive, at least partially, the goal and the intervening obstacles.

2. If the goal is too difficult in terms of the pupil's present development, it must be made easier or its pursuit must be delayed. Otherwise the pupil will develop symptoms of recessiveness (fleeing) or aggressiveness (fighting). Partial insight means a partial relief from tension.

3. Teachers should not be disturbed because all problems are not solved. It is stimulating to the pupil to know that some progress has been made and to know that there are approaches to the remaining problems.

The Insight Concept and Its Implications. Insight is sometimes defined as the sudden perception of the relationships in a total situation, *i.e.*, the relationships between the organism, the goal, and the intervening obstacles. Even though we admit that insight is sudden, it is important to

realize that it is preceded by more or less gradual development, growth, or progression toward a goal. It is necessary in learning to take preparatory steps. Even when a child has learned the notes of the musical scale he learns gradually to read them and to execute them on a musical instrument. His insight into the meaning of the notes is only a part of the total learning.

It may be profitable to disregard the element of suddenness and give attention to the matter of perception of relationships. Thus, learning to repeat a set of figures, such as 6, 7, 9, 12, 16, 21, 27, 34, etc., or 8, 7, 9, 6, 10, 5, 11, 4, is more readily accomplishd when the pupil sees the pattern or relationship of the numbers. In fact, if insight is achieved immediately there is no need for repetition. Obviously, maturation is a factor in the ability to perceive clearly the figure-ground pattern and thus achieve insight. A child who knows numbers but not the concept of addition may learn to repeat the series of numbers, but one who knows how to add (a matter of maturation and experience) can learn the series more readily. Meaning is fundamental in field theory since it conditions the organism's response.

If insight is to be achieved school tasks must be appropriate to the understanding of the child. This emphasis is one of the more significant contributions of field theory to the interpretation of learning. The frequency of failure in grade school and poor work in academic subjects in high school is evidence either that (1) the work is too difficult for pupils to achieve insight or that (2) explanations by the teacher and/or textbooks are not sufficiently clear to foster insight.

In the concept of insight, emphasis is again placed on motivation. Development of insight is more likely if goals are clearly defined and if they are significant to the learner. When the learner accepts the goal he will exert energy to achieve that goal.

The teacher who trusts to the slow processes of growth will not despair when pupils state or otherwise indicate that they do not understand a particular problem. In such cases smaller steps may be taken or intermediate goals may be pursued. An experiment in insight made on monkeys has shown that the animals initially required a long time to solve problems but that as they were trained in a large number of situations requiring discrimination they began to solve new problems more readily (115).

The concept of insight can be helpful to the teacher when he realizes that (1) insights are partial, (2) they are dependent upon the development level and experience background of the learner, (3) goals tend to consolidate energy, and that (4) even attempts to solve problems (though they may not really be solved) are educative. Some ways in which insight may be fostered are schematically shown in Fig. 11.

We may summarize by saying that learning is characterized by changed perception, improved reactions, differentiation of stimuli and response, integration of stimuli and response, and achievement of understanding,

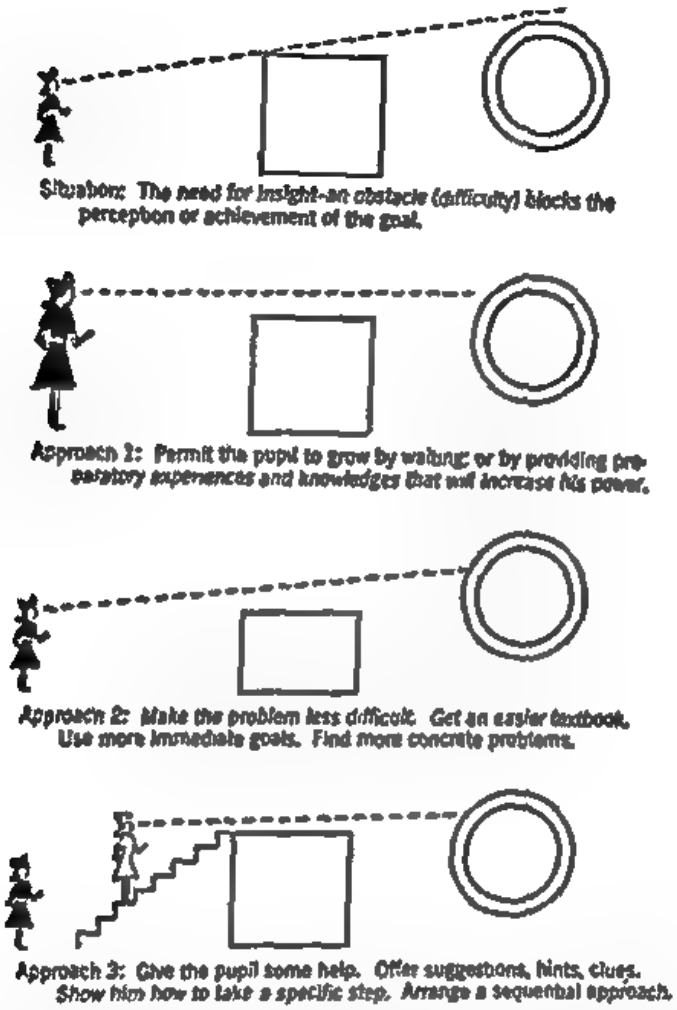

FIG. 11. Schematic representation of the facilitation of insight. Situation: The need for insight—an obstacle (difficulty) blocks the perception or achievement of the goal. Approach 1: Permit the pupil to grow by waiting or by providing preparatory experiences and knowledge that will increase his power. Approach 2: Make the problem less difficult. Get an easier textbook. Use more immediate goals. Find more concrete problems. Approach 3: Give the pupil some help. Offer suggestions, hints, clues. Show him how to take a specific step. Arrange a sequential approach.

or insight. Factors which condition learning are the state of the organism, the appropriateness of stimulation, and the existence of goals.

RECONCILIATION OF THE VIEWPOINTS OF LEARNING

The purpose of presenting representative viewpoints of learning is to emphasize that there are various and multiple explanations for the nature

and conditions of learning. No one theory presents all the answers. But each has a contribution to make in terms of understanding the total field of psychology and educational psychology.

There are some who are concerned that psychologists have not reached common agreement and that there is so much apparent dissension. Others feel that the conflict is healthful and serves to bring attention to various important aspects. Both these viewpoints have merit. It is unfortunate that we do not have enough precise information to be able to discard theories which are doubtful or erroneous. Yet it is fortunate that such stimulation by disagreement keeps psychological knowledge growing.

It has been shown that the nature of learning and its various theoretical explanations can be utilized to make the work of the teacher more effective. It is up to the teacher to use all available knowledge in attempting to solve specific classroom problems. The teacher must also continue to seek better answers from contemporary literature. Only the growing teacher can stimulate optimum growth in his pupils.

SUMMARY

Psychological Principle	*Practical Application*
The intent to learn facilitates learning.	Pupils must understand and accept the goals for learning.
The level of aspiration is affected by previous achievement.	Willingness to work will be fostered by tasks which are challenging but not frustrating.
Learning has its physical basis in receptors and effectors.	All teachers have the responsibility of watching for sensory defects in their pupils.
Physical health is a factor in determining the energy available for learning activities.	Teachers should encourage good health habits in sleep, exercise, and proper diet.
Conditioning is facilitated by contiguity, contrast, and similarity.	Learning is strengthened by dealing with immediate problems and showing differences and likenesses.
Satisfaction strengthens responses.	School should be pleasant and result in a measure of success for every pupil.
Frequent exercise of a modifiable connection strengthens it.	Review, drill, and practice are sound teaching techniques.
Economical learning is dependent upon the phenomenon of readiness.	Teachers must (1) wait for readiness or (2) provide developmental experiences that will lead to it.
Many responses are tried before a satisfactory one is found.	Teachers should permit and encourage pupils to experience and experiment widely.
The attitude of the learner affects his ability to learn.	The present interests and experiences of pupils provide a psychological starting point for class activities.

Responses are made to parts of a total situation.

In new situations responses are made which are similar to the response made in like situations.

Responses are made to a total situation.

In the figure-ground concept the figure is sharp and clear, while the ground is vague and amorphous.

The ability to achieve insight is dependent upon maturation and experience.

Learning is characterized by changed perception, improved reactions, and the achievement of understanding.

Important data should be presented in a variety of situations.

The unit approach provides a lifelike point of departure for classroom work.

Teachers must recognize that they themselves, the pupils, and the activities are all involved in learning.

Teachers have the responsibility of designating the important and indicating the unimportant.

Teachers must make goals clear and see to it that activities are appropriate to developmental levels.

Teachers must provide for variety in approach and have patience with the slow process of growth.

PROBLEMS AND EXERCISES

1. Select a subject you like very much and one which you dislike. Try to summarize the factors which influenced the formation of each attitude.

2. Evaluate the statement "Learning builds structure."

3. Defend or criticize the following statements from the standpoint of educational psychology:

"You can lead a horse to water but you can't make him drink."

"Necessity is the mother of invention."

"Practice makes perfect."

"We learn to swim in the winter and to skate in the summer."

"You can't teach an old dog new tricks."

"You can't change human nature."

"When reason is against a man he will soon turn against reason."

4. Why do we tend to forget the content of a history lesson or a memorized poem sooner than we forget the ability to swim?

5. Cite a number of theoretical considerations which support the use of the "unit approach" to learning. What are the theoretical shortcomings of such a method?

6. Since the administration of thyroxin sometimes results in better learning ability, why are not all slow learners given thyroxin?

7. Visit an elementary classroom and record every evidence you see of use being made of the principles involved in connectionistic theory.

8. Visit a high school class and record any evidences of the operation of field theory. What other uses could have been made of the theory?

9. For several consecutive periods note any evidences of visual or auditory difficulty manifested by your classmates.

SUGGESTED ADDITIONAL READINGS

Hilgard, Ernest R., *Theories of Learning*, New York: Appleton-Century-Crofts, Inc., 1948, pp. 325–360.

The author expresses dissatisfaction with the existence of diversified viewpoints. He feels that the disagreements tend to create an unjustified feeling of doubt about the validity of psychology.

Hilgard, Ernest R., and Donald G. Marquis, *Conditioning and Learning*, New York: Appleton-Century-Crofts, Inc., 1940, pp. 1–23.

This chapter shows that conditioning is more than a viewpoint in learning. It is a factor in learning that may be perceived to be a thread which runs through ancient, as well as recent, views.

McConnell, T. R., in *The Psychology of Learning*, Forty-first Yearbook of the National Society for the Study of Education, Part II, pp. 243–286, distributed by University of Chicago Press, Chicago, 1942.

Differences in learning theory arise from the fact that various aspects of psychological functioning have been the focus of particular groups of scholars. Progress in psychology will result from a synthesis of viewpoints as contrasted to a study of the points of variance.

Woodworth, Robert S., *Contemporary Schools of Psychology*, rev. ed., New York: The Ronald Press Company, 1948, pp. 253–255.

Woodworth indicates that every "school" is a good one but that no *one* school is good enough. Each has a view but not the whole view. The negative aspects of the various viewpoints must be discounted in favor of the positive contributions of psychology as a whole.

AUDIO-VISUAL MATERIAL

Broader Concept of Method, Part I, Developing Pupil Interest, McGraw-Hill Book Company, Inc., 330 West 42d St., New York 36. (13 min, BW, sd.)

A contrast is drawn between formal recitation and informal group discussion in which pupils, under guidance, share in planning their work and are consequently more closely identified with it.

Learning Through Cooperative Planning, Teachers College, Columbia University, New York 27. (22 min, BW, sd.)

This shows, for all age groups, how children acquire one of the important skills of this day—effective participation as a group member. The work concerned is a community beautification project.

8

REASONING AND PROBLEM SOLVING

RICH AND VARIED experiences must be provided in the classroom, but these are not enough. Life after school will bring problems that have not been anticipated in the best classrooms. If intelligence is to attain its highest potential it must be used for more than remembering, imitating, and trial-and-error experimenting. If the individual is to realize his capacity for uniqueness he must be able to create novel responses to novel situations. If citizens and statesmen are to keep their government dynamic then healthy tradition and custom must be guides rather than rules. If society is to continue to evolve, it must be possible for individuals to adapt to conditions which have not previously existed. In short, individual and social evolution is dependent upon the ability to think, to reason, and to solve problems.

Teachers in schools of a democratic society should be acutely aware of the nature of problem solving and its constituent elements so they can give effective guidance to pupils in the development of this significant ability (193). It is perhaps advantageous in totalitarian societies for pupils to learn by rote answers that have been prepared in advance by "experts." But in our society the superior citizen is one who questions, criticizes, judges, evaluates, investigates present procedures, and suggests means of improvement. The fact that the schools have been successful in this area is attested to at many points. This chapter deals with factors which contribute to originality and resourcefulness.

BASIC CONCEPTS

Thinking. Popular usage of the word "thinking" is less discriminating than is desirable in the study of educational psychology. The statement "I think I'll take a walk" does not necessarily involve the thought process or the adjustment which was referred to above. The individual could have said, "I'm going for a walk" and the meaning would have been the same. It is true that the individual may mentally "see himself" taking a

walk, but no problem is involved. Similarly, one might say, "I cannot think of the title of the book." Again, no problem is to be solved; the individual could have said, "I do not recall the title." The mental process of memory is involved, but there is no novel situation to be resolved. There are, however, popular usages which make thinking synonymous with problem solving, as when a person says, "I'll think your proposition over." He means by that that he will take some time to weigh, evaluate, and rearrange the elements of the situation in such a manner as to come to a conclusion. This conclusion will enable him to make a choice or a decision. This latter use is the interpretation of "thinking" that is adopted in this chapter.

Daydreaming. Daydreaming is a mental process in which the "mind wanders freely" but is not oriented toward some particular goal. The individual is probably engaged in recalling and imagining and he may be visualizing situations, but he is not consciously seeking a goal. The expression "He is lost in thought" may, of course, mean that one is concentrating deeply upon some problem, but it may simply mean that his "mind" is wandering freely from immediate and objective stimuli. If thinking involved visualization and perception without immediately present stimuli we could say that daydreaming is a kind of thinking. But when choice is involved a sharper concept must be formulated.

Reasoning. "Reasoning" is widely used to describe what many psychologists are referring to when they use the word thinking. In fact, many psychologists avoid the word "thinking" and use "reasoning" in its place. Reasoning refers to the processes involved in working toward the solution of a problem, the answer to which is not immediately supplied by past experience. There are three elements in this process which deserve particular consideration. The first element is time. Reasoning involves the *delay* of a response while the reasoner assembles, arranges, and rearranges the information needed in the solution of the problem. The second element is the information itself. Reasoning takes place *only* when one knows the facts that are pertinent to a solution. One may stumble on a solution, but the result is only a trial-and-error answer—not a product of reasoning. The third element is the problem—the goal toward which reasoning is directed. These elements can be placed together to form a definition for reasoning: A process of delaying responses until data are arranged into a new combination so that a clearly perceived goal can be reached.

Insight. The mental process by which a new and revealing combination of data is perceived is called insight (see pp. 141*ff.*). The individual who possesses insight understands how obstacles can be surmounted or circumvented in order to reach a desired goal. Thus, insight is related

are also many individual steps, many partial understandings, and many experiments that must be made. Much patience must be exercised before the final insight is achieved.

Tentative Answers. It is said that the completely logical person is not a man of action. This statement is based on the fact that there are no ultimate, unalterable answers to problems. The logical person knows that not all the data are gathered, not all the situations have been defined, and not all the events in an individual's life have been accounted for. Hence, he must continue his search for information and try to foresee future situations and events. He must hold action in abeyance until the answer is complete and indisputably correct. Since the complete answer is never formulated the individual continues to be logical but fails to take action.

Reasoning demands that action be checked but not ceased. As individuals trying to achieve our own maximum potential, and as teachers trying to help pupils toward better adjustment, we must stress the necessity of learning to act on tentative conclusions. It must be realized that there is a need for balance between what *might* be done about a problem and what *is* done about it. Logical answers must be put into practice. There may be no final solution but there is, in all probability, a satisfactory one.

The importance of this principle may be illustrated by referring to a principle of mental hygiene. The person who is blocked by an obstacle may be described as being thwarted. As long as the obstacle remains before him he will be in a state of disequilibrium; but when progress is made toward the goal and when it is finally reached the tension is reduced. Energy expended in progressing toward the goal dispels the tension. To continue to reason, to be logical, will ultimately result in such an accumulation of tension that the individual can no longer stand it and has a "mental breakdown." Something must be done. A tentative conclusion must be tried even though that conclusion is modified later.

FACTORS INVOLVED IN REASONING

Maturation. Different types of difficulty may be resolved by the process of reasoning. A young child may assemble jointed sticks to reach an object that is otherwise beyond his reach, but he would find the solution of an algebra problem much too difficult. Nevertheless, the process of reasoning is involved in both cases. This difference in ability to solve problems indicates that an important factor in reasoning is maturation. It takes time for the brain and for perceptual powers to develop to the point where relationships can be perceived. Moreover, maturation must be accompanied by the accumulation of experience. Here, again, we see at work the growth principle—growth is the product of the interaction of the organism with its environment.

The part played by maturation in problem solving is of much more than academic interest to teachers. It can be seen that the situations presented to pupils must be appropriate to their developmental level. Problems that are too difficult will result in blind behavior, retreat, or frustration (136). Blind behavior is illustrated in psychological experiments when a cat in a box slashes about wildly with no semblance of systematic searching or directed effort. Children show the same reaction when their efforts to open a box are futile and they tearfully beat the box or the cover. Retreat, or "leaving the field," is illustrated by either actually abandoning the situation or retiring within oneself (as does the college student when he daydreams during the presentation of an incomprehensible lecture). Pupils in school leave the field by engaging in horseplay when they should be working at their arithmetic or algebra problems. Frustration in children is evidenced by such symptoms as withdrawing, thumb-sucking, and temper tantrums, none of which are directed to the specific situation but are evidenced in general behavior.

If, on the other hand, problems are appropriate to the pupil's developmental level he acquires confidence. He grows in the ability to attack more difficult problems, and he learns the value of a systematic approach to difficulties. The teacher, bearing in mind the importance of problem-solving ability, will attempt at as many points as possible to show how the methods employed in the solution of a specific problem can be utilized in other perplexing situations. Maturation and experience are inseparable aspects of problem solving.

Experience. All reasoning depends on information, as well as on the necessary brain power to acquire and utilize that information. People in everyday life are often deemed to be good thinkers because they have the experience that allows them to deal constructively with a situation. Readiness for problem solving is dependent to a very large extent upon a background of experience. The dependence of reasoning on experience suggests four widespread teaching practices which are inimical to reasoning.

1. Rote learning does not foster the development of powers of reasoning. Criticism of this educational practice has been made in many connections, but nowhere is the criticism more pertinent than in the context of reasoning.

An interesting experiment by G. Katona throws light on this situation. In studying how subjects solved a match puzzle (making four squares by moving three of sixteen matches which originally made five squares) he found that knowing the principle involved not only improved immediate results but resulted in still greater improvement after four weeks. He concluded that learning with understanding improves retention and the ability to move forward, or transfer, to another task. Only when the

attempt at understanding and organization fails is it necessary for the pupil to resort to rote learning (148). The necessity for comprehension is obvious in learning, memory, motivation, and transfer; yet many teachers fail to grasp the significance of understanding.

If thinking is to take place, the search for information must not be limited by a course of study or by what the teacher deems to be important. The pupil sees learning in a different perspective. He has a unique background of experience to which to attach the new. The teacher must, therefore, be patient when pupils seem to wander from the subject. Guidance is needed, certainly, but the school cannot be regarded as a filling station for ideas. It must be a laboratory where experiences pertinent to the particular individual are provided. Then education will truly become the reconstruction of experience which leads to more and more effective learning. The role of experience has been summarized in four steps: (*a*) children should have continuous experience; (*b*) the experience should be recorded; (*c*) the experiences should be related through pupil activity; and (*d*) the experiences should be meaningful so that pupils will achieve insight (24).

These remarks should not be misinterpreted as a recommendation that facts should be neglected. Data, facts, and knowledge are the tools for and materials of thinking. But repeating the names of the presidents in order, listing the classifications of insects, or memorizing the theorems in geometry is learning of a limited type. Unless these facts are learned in terms of the individual's own experience, in terms of his understanding of their meaning and importance, in terms of his problems and needs, they are useless in developing his power to analyze, interpret, and synthesize. From the very beginning of their school experience it is possible to present children with situations which are understandable and about which they are willing and able to learn. Experience, it must be remembered, is a personal affair. Significant problems and learning can be stated only in terms of the individual pupil.

2. Another common practice inimical to the development of reasoning is the teacher's excessive dependence on imaginary problems. The study of mental discipline and transfer of training indicates that performance of mental exercises is not necessarily carried over to other situations. Emphasis must be on *real* problems that confront the pupil and stress must be placed on methods of solutions—the sources of information, the classifying of data, the weighing of relative merits of information. Thus, studying any problem should not stop with suggesting answers to that problem. It should provide training in the use of encyclopedias and other reference books, and emphasize the value of consulting experts in the area of investigation. If these methods are stressed, the pupil will be prepared to approach such problems as "How can citizens make their wants

known to their elected representatives?" or "How can a hobby be made a source of financial profit?" This is quite a different situation from the one in which a student is asked, "How many 1-inch cubes will have three red faces, how many will have two red faces, and how many will have one red face if a red, 3-inch cube is cut so there are twenty-seven 1-inch cubes?" The carryover value of such a problem is negligible. The exercises at the end of the chapters in this book can be artificial if they are answered in terms of "intuitive beliefs." But the reader who reflects on his past experiences, consults others about their views, reviews the textbook, and consults supplementary references is forming habits of problem solving. Moreover such procedures will help him solve future problems.

3. The teacher's desire to answer pupils' questions is another practice that is inimical to encouraging reasoning ability. This tendency is rooted in the psychological orientation of the teacher. If he feels somewhat insecure he will be afraid that not answering the question will cause the pupil to think less highly of him. This sometimes leads teachers to attempt answers in areas with which they are unfamiliar. If, on the other hand, the teacher is sure of himself, or if he has the requisite knowledge to answer the question he can with confidence say, "That's a good question for you to study. I'd like to know more about it myself. See what the encyclopedia has to say about it and let me know." Another approach might be to say, "I have some very definite ideas about the problem but before I tell you what they are I wish you'd formulate an answer—then we'll see how well we agree." Certainly, it is nipping a good educational opportunity in the bud to answer the question immediately.

4. Problems inappropriate to the pupils' level of experience do not stimulate reasoning. The necessity that the teacher observe his pupils to see that problems are meaningful to them has been exceptionally well stated by William James:

> Let us give the name of *hypothesis* to anything that may be proposed to our belief; and just as the electricians speak of live and dead wires, let us speak of any hypothesis as either *live* or *dead*. A live hypothesis is one which appeals as a real possibility to him to whom it is proposed. If I ask you to believe in the Mahdi, the notion makes no electric connection with your nature—*it refuses* to scintillate with any credibility at all. As an hypothesis it is completely dead. To an Arab, however (even if he be not one of the Mahdi's *followers*), the hypothesis is among the mind's possibilities: it is alive. This shows that deadness and liveness in an hypothesis are not intrinsic properties, *but relations* to the individual thinker. They are measured by his willingness to act.[1]

[1] *The Philosophy of William James: Selected from His Chief Works*, New York: Modern Library Series, Random House, n.d., p. 158. The passage was taken from William James, *The Will to Believe*, 1897.

If in the foregoing passage the word "problem" is substituted for "hypothesis," the teacher will see that what is a problem to him is not necessarily a pertinent one to the pupil who has had less or different experience.

Data. This factor should not be isolated from experience. Many college students and some teachers apparently believe that there is a clear distinction between learning facts and learning to solve problems. For example, students have objected to examinations in educational psychology which called for the stating of facts and principles: "You told us that the important thing was to develop the ability to reason." This would be a valid objection if the facts were treated as isolated bits of information or as words to be memorized from a book. But it must be clearly understood that reasoning must always depend on facts—and the more pertinent the information the more direct and incisive the reasoning. One attitude to be developed in school is, of course, a respect for facts. When pupils get into discussions and arguments teachers should ask them to observe those who marshal the facts and those who make their emphasis simply by means of loudness. He should commend those who have conducted research and utilized the findings.

Scientific investigations, whether in the realm of the natural sciences, education, or psychology, all point to the fact that ample data are requisite to problem solving. Scientists emphasize that the solution to problems must necessarily be hidden somewhere in or among the data. If the answer is not discovered there are only two explanations. One is that the data are as yet insufficient and the other is that the investigator lacks the insight to see the answer. There is no inherent contradiction between learning facts and learning to think.

If we were to differentiate between education and training (and it will be admitted that training has its place), we could safely say that the aim of education is to foster problem solving. This inclusive aim can be accomplished only by combining the three factors maturation, personal experience, and the systematic gathering of facts. Only then can teachers presume to have executed their duty in a democratic society. Only then will pupils be prepared to face problems that are not specifically included within the school curriculum.

STEPS IN PROBLEM SOLVING

When one reflects on the many inventions, theories, practices, and situations resulting from reasoning, it is quite obvious that problem solving cannot easily be resolved into a series of orderly steps. Too many factors and processes are involved to permit more than an academic statement. Certain steps will be discussed in this section, but it must be remembered that in a given reasoning process the steps may be rear-

ranged, two or more steps may be taken simultaneously, or steps may be separated into various groupings. Nevertheless, it is helpful to understand what the steps are even though they are not followed in one, two, three order.

A Felt Need. The first step in problem solving is a felt need. Before the individual projects himself into a problem-solving situation, he must experience an unfulfilled desire. "The difficulty may be felt with sufficient definiteness as to set the mind at once speculating upon its probable solution, or an undefined uneasiness and shock may come first, leading only later to a definite attempt to find out what is the matter." [2]

Many attempts to teach pupils how to think fail at this initial stage. Problems are given to youngsters which they do not comprehend and which have no personal meaning for them. The consequence is superficial performance of the task and dependence upon adult authority for the answer. There is a place for teacher direction and assistance, but the starting point is a problem which pupils can understand and with which they can identify themselves.

Locating or Recognizing a Problem Situation. A problem is not a problem because of external conditions alone. The payment of income tax may be a problem for an adult but it is not such for a young child. The payment of the tax may actually in some way interfere with the child's easy adjustment but is not a problem until it is recognized as such. A problem, therefore, is an obstacle to adjustment that is recognized by the individual. The more clearly one can state the nature of his difficulty the more likely he is to solve it.

Even an adult may be unaware of the difficulties involved in tax payments—aside from personal inconvenience—until he reads an article on governmental expenditure. Reading such articles may sharpen and broaden the problem for him and perhaps lead him to further investigation and evaluation of the solutions which are proposed. The problem is now becoming clearer by reason of its more lucid description.

Since problems are dependent upon the individual and since they exist only in terms of the experience of the individual, it can be seen that in education the teacher's willingness to *give* answers is inimical to thinking. The pupil must be allowed to wrestle with situations before he will see the inherent obstacles. If the teacher gives the solution immediately the time necessary for the student's understanding of the problem is too short. Many authorities bemoan the fact that education is so much concerned with pouring information into students that little time is left for them to ask questions. We are so anxious to provide answers that the techniques for formulating and asking questions are neglected. Psycholo-

[2] John Dewey, *How We Think*, Boston: D. C. Heath and Company, 1910, p. 72.

gists and teachers who are interested in the future adjustment of pupils, as well as their present behavior, must recognize that *the questions they ask* provide the background for a lasting kind of education (143, p. 55).

The Accumulation of Data. Recognition of a problem is only one step in the reasoning process. One must avoid the tendency to allow prejudice, tradition, slogans, and clichés to interfere with the reasoning process. Reasoning cannot begin with a conviction. Hence, a prime responsibility of the teacher is to instill in pupils a respect for factual knowledge and an appetite for information.

Teachers must not mislead their pupils. Gathering data to solve a problem is not an easy undertaking. It would be erroneous in the extreme to conclude that listing the steps involved in reasoning is in any way a substitute for the tedious and time-consuming task of gathering information. Much of the time spent in this task will in retrospect seem wasted because inevitably much of the assembled information turns out to be inappropriate to solving the problem. But it must be repeated that out of the data suggestions for the answer will always come.

Authorities in the field of research state that the "original mind is the informed mind." Competence in research—knowing what is worth investigating, knowing how to select productive methods, and being able to foresee the most likely outcome of study—is the result of being well informed. Again, adequacy in any area is the result of growth.

Although they may recognize the importance of information and its continued acquisition teachers have apparently grossly neglected the matter of helping pupils record that information. Recognized scholars as a general rule do not depend too heavily on their memories—they "make a note of it." Teachers should begin early to emphasize this important skill. Among the factors involved in gathering and recording data, which could be begun as early as the seventh grade, and perhaps earlier, are the following:

1. Encourage pupils to make a record of sources. Get them to note the writer, the date of the material, and the book or magazine in which the data appeared. Not only will this save time but it will add impressiveness to their presentation of data.

2. Encourage pupils to develop skill in making brief notes. Too much time spent in recording reduces the time available for research. Too many notes discourage the student from using them. Only through directed practice can the pupils learn which data are significant.

3. Encourage students to make notes on cards rather than on full sheets of paper. This practice calls upon the student to fill in the gaps, to become "active" in presenting his information. The author requires his students to give all reports from cards. Since this requirement has been instituted the reports are much more lively, and one student has remarked appre-

ciatively, "One can scarcely be challenged by information that he knows has not been assimilated by the reporter." This requirement has also proved successful in public school classes. Simplicity and systematic gathering, recording, and presenting of data are not the result of accident but of guidance on the part of the teacher.

There is no substitute for the gathering of data in the problem-solving process, but there are ways of making the laborious process interesting and effective rather than tedious. Habits of orderliness and thoroughness are just as self-perpetuating as are habits of sloppiness and superficiality. If the pupil achieves a satisfaction of accomplishment from a thorough job of data gathering he will be establishing an important aspect of problem solving in his reaction patterns.

Formulating a Hypothesis. This may sound like a complicated process which is beyond the level of comprehension of an elementary school pupil. A hypothesis is simply a tentative guess about the probable outcome of a particular situation based on a certain amount of information. A hypothesis is a theory that is assumed to be true on the basis of information that is presently available. It is a guess supported by presently known facts. As an individual matures and as he acquires experience which enables him to evaluate his data, his hypothesis will be altered and improved. Thus, it can be expected that the typical high school student will have less difficulty in formulating a valid hypothesis than will younger students.

Whether the hypothesis is stated as such or is simplified in such a question as "*What do you think will be the result?*" it is up to the teacher to stress the point that the hypothesis is used to test data. In sound reasoning, the hypothesis is a theory to be proved *or* disproved, *not* something that must be supported. This error in reasoning is made by many adults, *i.e.*, formulating a hypothesis and then seeking facts to support the contention. Pupils should be led to realize that it takes time to formulate a good working hypothesis. This is no less true for elementary pupils who are working on the problem "How playgrounds should be regulated" than it is for high school pupils working on the problem "How delinquency can be reduced in our town."

The fact that steps in reasoning do not necessarily follow a sequential order is illustrated in the formulation of the hypothesis. The initial formulation may indicate the need for further data, which when gathered necessitate a reformulation of the hypothesis. This step in reasoning is no less important than the original formulation. Moreover, it illustrates an important characteristic of those with superior reasoning ability: they keep an "open mind." Whereas the biased reasoner will tend to cling to his original theory the true reasoner will regard it as tentative, as valid in the light of present data but always subject to alteration.

It should be suggested here that teachers should allow pupils the freedom to deal with information as they see fit. They should encourage pupils to make their own guesses, because experience is essential. One psychologist has suggested that if one goes through the *motion* he may feel the *emotion*. It is pertinent to observe that if one obtains the facts and looks at them with a view to making a hypothesis, he *may* be able to formulate one. We cannot demand that a pupil formulate a valid hypothesis, but we can help establish the conditions that may lead him to do so.

Testing the Hypothesis. The testing of the hypothesis can be either theoretical or practical. Pupils can be asked to try to foresee the consequences of their tentative proposal, or they can be given an opportunity to give it a trial run. If conditions permit, both tests may profitably be made. The ability to foresee outcomes is dependent both upon maturation and upon experience. It is fruitless for teachers to wait for maturation alone. They should not ask the question, "When is a child old enough to carry on a process of reflective thinking?" but rather, "How many opportunities can I give my pupils to anticipate consequences?"

An excellent way to provide children with opportunities for examining the probable outcome of their hypotheses is through group discussion. Such discussions, dealing with situations that are real to the pupils, can provide the experience that should accompany the process of maturation. Listening, questioning, and commenting are all helpful in forming a hypothesis. By listening the pupil gets ideas to add to his own. By questioning he gets information that he thinks is important. By commenting he rearranges and alters his own ideas. Furthermore, in group discussion the pupil projects himself more firmly into the situation. The child needs to talk about his problems even more than does the adult. It seems somewhat odd that it takes so long for teachers to realize that group work "pays off." It has been shown that students working puzzle problems were about five times as effective when they worked in groups as when they worked as individuals (240). Add to this the facts that many problems of citizens must be solved in groups, the motivating factor of social contact and the advantage of pooled wisdom, and the teacher has significant reasons for providing time for group work and group discussion.

So-called experimental work in the high school sciences may or may not teach pupils how to reason. If the problems have meaning for the students then excellent training is provided. If, on the other hand, the problem is an exercise from a manual its solution may provide little or no exercise in thinking. It is necessary for the teacher to stress the probing process, to encourage the pupil to form his own hypotheses and

anticipate outcomes. Textbook or manual problems are not necessarily artificial. The point is that the pupil must accept the problem as his own and actively seek the answers, test the hypothesis, and formulate conclusions rather than merely follow each of the steps outlined in a manual. Problem solving is an active process and must of necessity involve more than routine, formalized steps.

Testing the hypothesis involves other steps in the reasoning process. Testing, whether theoretical or practical, gives additional information or data about the problem. The new information may suggest the need for still further information or may result in an alteration of the hypothesis. In either case, the various steps in problem solving overlap, repeat, and synchronize.

The Making of a Generalization. Testing of the hypothesis may be the final step in the solution of a problem. However, higher forms of reasoning demand still another step—the making of a generalization. The generalization is an attempt to give the discoveries that have been made wider application than the solution of a specific problem. Attempting to answer such questions as, "What other situations would this solution seem to fit?" "How could the procedures used for gathering and evaluating data be used in another problem?" or "How can the results of your inquiry be briefly stated?" directs attention to the forming of a generalization.

This final step is an attempt to consolidate the conclusion in order to conserve the meaning. It is a verbal description of the salient information that has been obtained. The fact that this final step is often neglected is illustrated by the fact that children and adults often attack a problem with no apparent reference to previous problem-solving experiences. It requires reflection and evaluation to formulate a generalization. But it is this process that adds most to the potential of a pupil to use previous experiences in attacking his next problems.

Teachers have the responsibility for impressing upon students the value of making sound generalizations. One of the defects of much "thinking" is that people jump to conclusions. We see evidence of this defect all around us: "I once knew a German who was typically egotistic," "He's a good example of the stubbornness of a Swede," or "He's a typical only child." Many prejudices have just this basis—jumping to conclusions on the basis of one or two observations that seem to support some popular belief. Objective and abundant observation will show that there is no more a typical German, Swede, or only child than there is a typical fifth-grade pupil or adolescent.

None of these steps in reasoning is beyond the level of ability of school pupils. The power to hold an idea in mind long enough to test it

and use or discard it is evidenced from the age of two years. By the sixth year reasoning ability is frequently noticeable. As time and experience play their parts the ability to reason gains in vigor and incisiveness.

It is important to note that problem-solving ability undergoes a process of steady improvement. There is no distinctive qualitative difference as age increases. The teacher's efforts to promote verbal facility, to generate interest, and to describe problems in the pupils' terms will contribute to their ability to generalize. No great results should be hoped for. It must be remembered that adults are also naïve and inconsistent when they are dealing with ideas outside the realm of the familiar.

A study of the reaction of several preschool to failure can be interpreted as a situation involving problem solving. These children were asked to do difficult tasks with blocks and puzzles. They were reminded of previous success and shown the significance of former experience to encourage them to continue their efforts. Pupils who received no verbal help with the tasks revealed more immature responses. The experimenter felt that children could profit from such experiences in educational situations in general (152). Certainly, those who appreciate the significance of success and failure would agree that reminders of past success have merit.

Constructive forward steps in education will be taken when more teachers realize that it is possible to teach children how to reason. Psychological experimentation and observation indicate that reasoning does take place, even among very young people, when they are presented with real problems and when they are given encouragement, time, and guidance. In short, reasoning can be stimulated when isolated facts receive less emphasis and are instead related to problems.

An Illustrative Problem. The procedures of problem solving can be illustrated by tracing one classroom situation through each of the steps stated in this chapter.

One of the boys in the fifth-grade class had been absent for two or three days. Since he was a leader in both classroom and playground activities his absence was noteworthy. Pupils asked where he was but no one knew. One boy stated that he lived not far from the home of the absent boy and would try to find out what had happened. Here was a problem that was felt by the pupils and guesses about the reasons for his absence were not satisfying. The problem, though vague, was felt, so the teacher decided to encourage pupils to use the situation as a means of illustrating the approach to problem solving.

The boy who had volunteered to find the reason for his classmate's absence reported that he had gone to the boy's home and was told that his friend had scarlet fever. He learned that the boy would be absent

from school for some time. The teacher pointed out that here was the beginning of the process of gathering data and a sharpening of the problem. What is scarlet fever? How serious is it? How does it start? Students volunteered answers, but it was felt that better answers could be obtained. Books were used to supply the answers. One pupil was delegated to ask the school nurse several questions. Data were accumulated and the problem became more specific.

On the basis of data accumulated guesses were made about why one child in school was stricken by scarlet fever and not another. Several days of study and research suggested the following answers: perhaps the family's water supply was contaminated. Perhaps they did not have window screens. Perhaps the boy visited someone who had the illness. These guesses seemed to be within the province of the data gathered; in short, the proposed hypotheses were partially informed guesses.

The hypotheses formulated were tested when the boy recovered and returned to school. He reported that their water came from a well, but that the well was situated a long way from the house and barn. They did have window screens, but the one in his room had a large hole in it. He had not been visiting anyone besides members of the class. Either the well or the screens seemed to be plausible answers. There was not much chance to test the screen hypothesis further but more questions were asked about the well. Livestock did sometimes get into the area surrounding the well. It was finally suggested that someone ask the nurse to have the water tested. This was done and it was found that the bacteria count was high. This then seemed to be the hypothesis which withstood the test.

The teacher attempted to get the pupils to generalize their experiences in research and problem solving. Among the generalizations formed were: One's water supply should be tested periodically. No chances should be taken with broken screens. It is desirable to maintain good health habits so that one is not susceptible to disease. In solving problems one should go to dependable sources for information. Much research is needed to be able to distinguish between seemingly good and really good answers.

These steps are not too difficult for children at the beginning of their school experience. Tenacity such as that revealed by these fifth-graders might not be shown by first-graders, but they too can feel and study problems. They can gather data. They can make partially informed guesses. They can test the guesses. And they can make limited generalizations. It would be well to reiterate that the correct solution of specific problems is certainly no more important than are the processes of problem solving and an interest in those processes.

CREATIVE THINKING

The line of demarcation between creative thinking and reasoning, or problem solving, is not very distinct. In some instances there seems to be no difference. Some writers state that when one solves a problem he has created a response which is, at least to him, new and original. It would seem too that the individual who is seeking to invent something new both to himself and to others is also facing a situation that is for him a problem. Hence it is to be expected that the processes of creative thinking would be much the same as those involved in problem solving. The first three steps listed below were formulated by H. L. F. von Helmholtz, and the fourth was added by G. Wallas (278). It will be shown that these four steps are similar to and that they explain and verify those just outlined.

1. *Preparation.* The importance of felt need and of collecting evidence are apparent in this concept. Preparation consists of purposeful study, experience, and absorption of information which has bearing upon a particular objective. As described by Helmholtz, this is a time-consuming process of steeping oneself in the lore of the subject. It further consists of making oneself so familiar with the facts that they can be recalled without reference to notes or records.

Pupils engaged in solving a problem, such as improving their social adjustment, would carefully define the problem, restate it, relate it to other pertinent matters (habits, attitudes, academic skills, etc.) and thus increase their familiarity with the problem. Preparing for approaches to the solution of the problem might include talking with their parents. Discussing the issue with their teachers would be helpful. Reading and experimentation in the solution of problems should become habits that are encouraged by practical educators.[2]

The teacher who would do a creative job can no more depend solely upon inspiration than can a creative novelist. He must examine his purposes, survey available resources, study his pupils, read pertinent literature, and evaluate his past experiences before he can reasonably expect to arrive at unique and workable methods of presentation. Pupils too should know that the capacity to do original work is "99 per cent perspiration and 1 per cent inspiration."

2. *Incubation.* This step in creative thinking is perhaps less susceptible to voluntary control than is preparation. The name was probably sug-

[2] This kind of approach to social and personal problems has been worked out for grades 5 through 10 by H. Edmund Bullis in *Human Relations in the Classroom* (Course I, 1947; Course II, 1948; Course III, 1951), Wilmington, Del.: Delaware Society for Mental Hygiene. These three volumes are handbooks which teachers can use to exercise problem-solving skills in the area of personal and social functioning.

gested by the incubation of an egg. Nothing is added to the egg from the outside during this period; it is merely kept warm and "waited upon." In this context the meaning is to release oneself from the pressure of fact gathering and studying and to wait for the idea to mature. The creative thinker does not completely abandon the idea but turns it over in his mind leisurely and periodically, but without trying to force the process. Hence, the practical implication is to wait, to turn to other things, but not to forget the matter completely.

Most of us have had the experience of being unable to express an idea or recall a name. Upon meeting an acquaintance unexpectedly, we may temporarily be unable to recall his name. Shortly afterward, when we have apparently forgotten the event, the name flashes into our mind. When called upon to recite we cannot say a thing, but after the bell has rung and we are thinking of the next class the complete answer that we wanted to give comes clearly.

The process of incubation should include (1) time for relaxation—release from the tensions of hurry and compulsion, (2) time for assimilation of ideas into the thought processes of the individual, (3) time for the rearrangement of information—the placing of different aspects of a problem in various sequences and contingencies, (4) time for various ideas to rise to a central place in thought—or to recede to positions of relative insignificance.

Here is another reason for a variety of class projects and approaches. When a "plateau" of learning seems to have been reached, it would be well to turn temporarily to other subjects and allow time for incubation. Then, when other events have reduced tension, the teacher can return to the point and hope that illumination will come.

3. *Illumination.* This is the stage when the hours devoted to study, research, and incubation are rewarded by a clearer conception of the answer to the problem. The school pupil comes to a clear understanding of the situation that was perplexing him. It is at this time that insight is achieved. The moment at which illumination occurs cannot be stated precisely. But it is certain that preparation and incubation must come first.

The only thing that teachers can do about this phase of thinking is to prepare the ground. The teacher should work patiently on the first two steps and keep the problem warm without putting pressure on the pupils. By this method the teacher can logically expect that illumination will occur for most pupils.

4. *Verification.* This fourth step was added by Wallas to the three steps formulated by von Helmholtz. It is akin to generalization, in which after the solution to the problem is found it is extended to other situations. Verification can be made clear by considering the process as a

A generalization is an attempt to extend the conclusion beyond the immediate problem.

Creative thinking may be divided into preparation, assimilation, incubation, and verification.

The temptation to stop with the answer should be avoided by discussing the implications of the answer.

Teachers should stress study and research, freedom to think, and reflection as the keys to insight.

PROBLEMS AND EXERCISES

1. Try to recall some instance in which you have said, "Oh, I see now," and see whether you can distinguish the steps that led to insight.
2. Why is it so important that people learn to act on tentative conclusions? How would you proceed to put this idea across to students?
3. Devise a list of criteria which would help you determine whether or not problems were appropriate to the developmental level of pupils you are teaching.
4. Are pupils confronted by problems of which they are not aware? How can the teacher help pupils become aware of such problems?
5. Prepare a statement you would present to pupils which would explain the importance and the process of forming a hypothesis. (Certain class members should prepare such a statement for intermediate school pupils, others for upper grade pupils, and others for high school students and bring the statements to class for criticism and suggestions.)
6. How could the upper grade social-studies teacher encourage pupils to test hypotheses formed in class?
7. Why is class discussion an advantageous approach to the forming of generalizations?
8. List five ways in which teachers can encourage pupils to think. Bring the list to class for revision and improvement.
9. Which of the four steps in creative thinking is most clearly distinct from the six steps in problem solving?
10. What course in high school do you feel has been of greatest value to you? What light, if any, does this evaluation throw upon the significance of problem solving?

SUGGESTED ADDITIONAL READINGS

Blackwood, Paul E., *How Children Learn to Think*, U.S. Office of Education Bulletin 1951, No. 10, 1951.

This pamphlet gives specific illustrations, taken from classroom activities, of the various steps involved in problem solving. It should provide the elementary teacher with concrete suggestions of what can be done to promote thinking.

Bode, Boyd Henry, "Education from a Pragmatic Point of View," *How We Learn*, Boston: D. C. Heath and Company, 1940, pp. 233–253.

This chapter stresses the necessity for *real* experiences for the pupil if education is to be more than the forming of routinized behavior. The role of language in thinking receives well-deserved attention.

Dewey, John, *How We Think*, Boston: D. C. Heath and Company, 1910.

This book has withstood the test of time and is still considered to be an

excellent presentation of the nature and procedures involved in problem solving.

Millard, Cecil V., "The Development of Creative Ability," *Child Growth and Development in the Elementary School Years*, Boston: D. C. Heath and Company, 1951, pp. 175–206.

This discussion is an excellent supplement to the discussion of creative thinking. Suggestions are given for fostering creativeness in writing, art, and drama. The importance of patience on the part of the teacher receives special stress.

Risk, Thomas M., *Principles and Practices of Teaching in Secondary Schools*, 2d ed., New York: American Book Company, 1947, pp. 451–469.

An explanation of the nature of problem solving is followed by specific classroom suggestions for encouraging and implementing this skill and habit.

AUDIO-VISUAL MATERIAL

Teacher as Observer and Guide, Teachers College, Columbia University, New York 27. (20 min, BW, sd.)

Indicates the importance of the teacher as an observer and guide of pupil growth. Problem solving, dealing with slow learners, promoting personality growth, and stimulating artistic expression are among the things shown.

9

EDUCATIONAL IMPLICATIONS OF TRANSFER

THE PRACTICAL MAN advises that we should not cross our bridges before we come to them. Of course, what the practical man means is that one *should not worry*. But preparation should and can be made for solving many problems yet to be encountered. So-called "transfer of learning" is of value in approaching solutions to life's dilemmas. The implication of transfer of learning is that if problems cannot be specifically prepared for before they occur, then they should be generally prepared for. If a solution cannot be reached, then an approach to a solution, or a method, is highly practicable. The phenomenon of transfer is such an approach.

Experimental studies of transfer today are concerned with the questions, "How can we get more transfer values?" and "What conditions stimulate the greatest amount of transfer?" For the student of educational psychology two questions are of vital significance: "What shall I, as a student, do about transfer?" and "What shall I, as a teacher, do about transfer?" This chapter is concerned with these questions. Any answers must be considered suggestive and illustrative. The student must apply the generalizations presented here to his own problems.

SOME PRELIMINARY CONSIDERATIONS

Mental Discipline. The theory of transfer of learning can more readily be understood if it is contrasted to its historical forerunner, mental discipline (also called formal discipline). At one time it was thought that the mind was made up of certain faculties or compartments. It was believed, for instance, that there was a faculty for memory, a faculty for reasoning, a faculty for esthetic appreciation, and a faculty for judgment. This element of the earlier theory was not completely erroneous, as contemporary experiments indicate. There are *generalized* areas of the brain that function primarily in certain mental activities. Another aspect of the theory was questionable, namely that these faculties are sharpened by exercise. It was thought that just as the muscles of the arm or leg

are strengthened by exercise, so too were the faculties developed by exercise—or by mental discipline.

Educational practice based on the theory of mental discipline stressed the necessity for developing the "sinews of the mind" by rigorous exercise. The harder the exercise the more the faculties were disciplined. The more difficult the schoolwork the more it was favored by teachers. Subjects which had proved to be particularly arduous were Greek, Latin, mathematics, and science. These subjects were enthusiastically taught in the school for their disciplinary value. There was no attempt to make schoolwork pleasant or interesting; in fact, more "discipline" was engendered if the tasks were unpleasant and burdensome. Little consideration was given to the utility of a subject as long as it provided strenuous mental activity.

The concept of mental discipline is today unpopular with psychologists and educators. Experimental studies indicate, for example, that memory, as a general function, is not improved by strenuous application to the memorization of poetry. Reasoning, in fields other than mathematics, is not automatically improved by studying algebra and geometry. But the past cannot be cavalierly cast aside. There are still parents and school patrons who are convinced that Latin, Greek, and mathematics should be included in the school curriculum because it is "good for the student." (Let it be said emphatically at this point that there is no objection to these subjects or to any other provided they are taught with transfer values in mind.) Educators who teach as if the subject were all-important are apparently concerned with the disciplinary function of learning.

Transfer of Learning. The fact that learning in one situation has an effect on learning in, or adaptation to, another situation is not doubted. The methods of solving arithmetic problems can be transferred to the solution of problems in algebra. Latin may, and often does, facilitate the learning of English vocabulary. The difference between mental discipline and transfer of training resides in the manner in which transfer between two learning situations is made. If improvement of learning in situation B is due to study in situation A, then mental discipline has resulted. If improvement in situation B is due to common characteristics shared with A, if it is due to a technique or to generalizations formed in situation A, then the improvement is in terms of transfer. We may say that one can believe in the transfer of learning and not believe in mental discipline. One cannot believe in mental discipline without believing in the transfer of learning.

An example of the way in which transfer of learning operates and an explanation of one of the conditions under which transfer is facilitated (*i.e.*, by formulating generalizations), are given in the following report

of a pioneer experiment,[1] which involved shooting at a target under water:

> One group of boys was given a full theoretical explanation of refraction. The other group of boys was left to work out experience without theoretical training. These two groups began practice with the target under twelve inches of water. It is a very striking fact that in the first series of trials the boys who knew the theory of refraction and those who did not gave about the same results. That is, a theory seemed to be of no value in the first tests. All the boys had to learn how to use the dart, and theory proved to be no substitute for practice. At this point the conditions were changed. The twelve inches of water were reduced to four. The differences between the two groups of boys came out very strikingly. The boys without theory were very much confused. The practice gained with twelve inches of water did not help them with four inches. Their errors were large and persistent. On the other hand, the boys who had the theory, fitted themselves to four inches very rapidly.

Negative Transfer. Transfer does not always have a positive effect. Learning in one situation may interfere with learning in another situation. This is called negative transfer. Some baseball coaches do not like to have their players engage in leisure-time golf because they feel that swinging a bat is so much different from swinging a golf club that the player's batting may suffer. Swimming is sometimes frowned upon by football coaches because swimming develops soft, fluid musculature, while football requires hard, powerful muscles. In the academic realm, it has been experimentally established that learning in situation A followed by a different kind of learning in situation B may interfere with a resumption of learning in situation A. This is known as retroactive inhibition. A study of the effects of Latin study on ability to write English compositions showed that the ability of the Latin students was inferior to that of control groups which had had no Latin (295). This indicates that if you want transfer *you have to teach for it.*

Experimental studies indicate that it may be well to avoid attempting to learn two very similar skills at the same time. Thus, confusions are likely to result if a pupil practices on a certain typewriter at school but practices on another typewriter with a somewhat different keyboard at home. Attempting to learn two foreign languages at the same time is subject to similar criticism. In French class one is likely to substitute a German word for a French word. Many studies have been made on pupils with a bilingual background—two languages spoken in the home. While children with a bilingual background are not consistently slow in learning correct English usage difficulty does occur frequently.

[1] C. H. Judd, "The Relation of Special Training to General Intelligence," *Educational Review*, 36:37, 1908.

These observations have pertinence for all teachers. It will help them better to understand children from neighborhoods where languages other than English are spoken. It may be helpful, in situations where the child is experiencing difficulty in language development, to explain to parents the handicap they are imposing by alternately speaking two languages. As will be shown later, pupils with high intelligence will experience relatively little difficulty, because high intelligence facilitates positive transfer. But for those of less intelligence the chances for confusion are sufficient to merit serious consideration in pupil-guidance procedures.

The Practical Import of Transfer. If we agree with the statement that "beauty is its own excuse for being," then some school subjects need no further justification. Art, music, and literature can be justified on the basis of their enrichment of daily living. Perhaps we need not be concerned about the transfer value of such subjects. The study of art and literature provides for satisfactions and enjoyment quite apart from their bearing on other aspects of living. However, if they are taught with transfer values in mind *their worth is enhanced.* While a student may derive satisfaction from working with color, there is no reason why he should not apply his knowledge to everyday matters of dress and decoration. The present values of a particular pursuit need not be repudiated because the pursuit has future implications.

When it comes to other subjects, in both the elementary grades and high school, the importance of teaching for transfer is still more evident. A few bright pupils may get so much fun out of solving mathematical problems that it constitutes an avenue for creativity. Some may study social studies much as they would art—just for the fun of knowing and learning. But for most persons it is safe to say that school subjects are meritorious to the extent to which they possess transfer values. By and large, school studies should have a great deal of reference to the future living pattern of the individual. The greater the reference for the future the more worthy of study they become.

With the passing of the popularity of the mental-discipline theory, school curricula are more often justified in terms of their implications for transfer. Inclusion of certain subjects just because they are difficult is not justifiable. But the translation of psychological findings into practice is not an easy matter. Much of the truth about transfer and mental discipline has been known for years, so it is disturbing to see the persistence of fallacious reasoning. Some of the high school curriculum is still taught because it "will improve the mind"—at least, this is the idea of some teachers and some parents. The development of intercultural understanding is a very good reason for teaching foreign languages. It is foolish to justify the teaching of languages on the basis of its value in disciplining the mind. There are individuals who will later use mathe-

matics as an important tool in their professions; but those who teach it often call it good "general training." The fact that education per se does not make a person "smarter" outside his line of specialty (220) is a lesson that both teachers and laymen seem to resist learning.

The college, high school, or grade school graduate can be more capable in subjects he has not previously studied if transfer, rather than mental discipline, has been stressed (34). The scientist who utilizes his methods in fields other than his specialty will be more capable than an equally intelligent individual who does not use such methods. One of the reasons for the frequent statement, "Outside his field he is no more capable than others," is that the person has studied specialized, isolated subjects. This is as true in the elementary school as it is in college. Too often pupils have studied from a textbook without being shown the implications for daily living, present and future, of that study. The inadequacy of the theory of mental discipline and the efficacy of transfer of learning provide a psychological basis for curricular organization which stresses the correlation of subject matter. Thus, instead of studying geography and history as isolated subjects, many schools are drawing from several fields of knowledge in solving problems that extend to sociology, history, economics, geography, and the natural sciences.

BASIC PRINCIPLES INVOLVED IN TRANSFER

How can you, as a student and as a teacher, get maximum benefit from transfer? All of us are concerned with making learning more effective, and transfer is another way of viewing the learning process. Teachers should, therefore, be interested in the conditions which will make for optimum transfer. Several explanations have been offered of the way in which transfer occurs. Each of these theories has very direct teaching and learning implications.

The Theory of Common Elements. The common-elements theory may be stated as follows: Learning is facilitated in a second situation to the extent to which it possesses factors which occurred in the first situation (266). The similarity of the two situations may be found in content, likeness of method or procedure, or commonness of aims. Thus, the study of Latin may promote the learning of English vocabulary to the extent that similar or identical roots are recognized. Learning to play handball will be achieved more quickly by utilizing one's experience in tennis.

This disarmingly simple explanation makes it seem that there is something within the situation itself that causes transfer. Actually, of course, it is something within the individual that causes transfer. If he has learned the habits involved so well that they have become a part of his reaction pattern, then transfer will be relatively greater. Thus, it ap-

pears that overlearning is advantageous in the transfer of learning. If we again take Latin for an example, transfer depends upon the extent to which the learner sees similarities between Latin and English. The similarity of the learning situations *must be perceived by the learner*, and this perception is most likely to occur if the teacher makes an effort to indicate those relationships. He can point out the common factors or stimulate pupils to find them, and he can present problems in the related fields.

Some transfer is automatic. Automatic transfer will take place in spite of defective teaching. But maximum transfer will be largely dependent upon effective teaching methods. The relatively intelligent pupil will see many similarities without help from the teacher. But the less intelligent will not perceive the similarity unless he receives some assistance, and even the bright pupil will probably see more relationships if the teacher gives some assistance. Knowledge of algebra as a technique for solving problems will not automatically carry over into the solution of political and social problems. Yet mathematics has been successfully taught as a method of problem solving in general (93). Students were led to see that mathematics and problem solving have these elements in common: making assumptions, forming precise definitions, breaking the major problem into steps, and seeking for proof of the derived conclusion. The experiment showed that the students who had studied geometry as a method of problem solving not only were superior in a statewide geometry test, but were able to transfer the techniques of practical reasoning to other areas. Those who defend the place of mathematics in the improvement of reasoning should realize that it is not mathematics that should be credited but the method by which it is taught.

Transfer of Learning through Generalization. If two learning situations have a high degree of similarity, the theory of common elements seems to provide an adequate explanation for transfer of learning. If, however, the degree of similarity is slight, transfer by virtue of generalization appears to be a more adequate explanation. Briefly, the degree of transfer depends upon the extent to which the experiences in one situation are consolidated into generalizations. This theory receives support from experiments in memory. It has been demonstrated that forgetting of memorized nonsense syllables, meaningless numbers, and isolated words is most rapid. Forgetting of memorized prose or poetry is comparatively slower. Meaningful materials are better retained because of increased relationships (201, pp. 207*f.*). Thus, there is greater likelihood of transfer from one situation to the next one when generalizations or principles are mastered.

Even though generalizations are stressed in the learning process it is necessary for the learner to realize that the possibility of further appli-

cation exists. Again, it is seen that if you want transfer you must teach *for it*. For example, one can memorize the growth principle, but if maximum transfer is to be made, numerous *examples of the principle* should be given. The generalization should be shown as operative in *physical growth*, mental development, the acquisition of knowledge, the evolution of personality, and the gaining of skill. The generalization *is* a form of understanding which enhances the possibilities of application *to new learning conditions*.

The theory of generalization stresses the importance of learning materials in such a way as to relate them to subsequent experiences. In the *target-shooting exercise described earlier*, the principles of the refraction of light upon striking water enabled the boys to adjust more readily to a change of depth (144). The educational significance of this theory can be more fully appreciated when we stop to *realize the impossibility of* educating youth for specific situations that they will meet later in life. Hence, learning of isolated facts is less productive than is learning of encompassing principles and broad generalizations.

Your own study of educational psychology may be used to illustrate the value of generalization in facilitating transfer. It should be obvious that this course will not give a direct answer to the problems you will encounter in teaching. But generalizations will help narrow the range of *search for the appropriate key to a specific situation. In the summaries* at the ends of the chapters generalizations parallel *illustrative* situations. Furthermore, your understanding of the generalization will be improved by *extending the illustrative situations*. Educational psychology will be quickly forgotten except for the parts which can be related to your own *real* problems. Your chances for later success will depend partially on an appreciation of the import of generalization. You will see that arithmetic teaching will be most effective when the pupil understands the principles involved. *In English composition you will find that the student will write* more effectively when he comprehends the rules of good grammar. Geometry problems can be solved—even when the letters on the figures *are shifted—when the pupil* "sees" the theorem. The idea of generalization is not new—it represents a trend in present-day teaching methods.

Actually, the explanation of transfer on the *basis of common elements* is not far removed from the explanation on the basis of generalization. The efficacy of generalization depends upon similarity between two situations and the *pointing out of common* elements is in itself a kind of generalization. Further, the basic consideration is the same in both: Transfer must be a planned objective.

Transfer through the Formulation of Ideals. As a third explanation of transfer, W. C. Bagley has postulated the idea that transfer is dependent upon the formulation *of ideals* (*12, p. 118*). He reported an experi-

ment with a group of third-graders, in which emphasis was placed on accuracy and neatness in arithmetic problems. No increase in accuracy or neatness in their spelling papers was noticed. However, when neatness was emphasized as a general ideal, improvement in all work submitted was observed (227). Such experiments have led to the conclusion that ideals facilitate transfer. Again, this explanation is not far removed from those previously described, because ideals are, in daily life, a special kind of generalization. There must be enough identity in two learning situations to permit the ideal to be operative.

This explanation of transfer, in spite of similarity to other interpretations, has significant educational implications. Neatness is a relatively minor ideal—perhaps actually unimportant in many circumstances. But love of learning, desire for knowledge, tolerance for differences of opinion, and eagerness to grow are ideals and attitudes of continuing importance.

Ideals should be made conscious objectives of the teacher who seeks maximum values from the phenomenon of transfer. "It is not too much to say that an intelligent and instructed attitude towards the question of transfer is absolutely foundational to any attempt to improve instruction by the application of scientific psychological knowledge." [2] An "intelligent attitude" means primarily that teaching method and organization must be such as to secure maximum transfer.

The Gestalt View of Transfer. Gestalt psychology places emphasis on total patterns of behavior. Wholeness, or unity of response, is stressed. Strenuous objection is made to the notion of *parts* functioning in isolation. The fruitful approach to the study of behavior is the molar approach rather than the molecular approach. Hence, transfer is dependent upon whole-part relations between the old and the new situation, as well as upon the learner's *perception* (or insight) of these relations.

R. H. Wheeler cited studies (32 and 89) to prove that, strictly speaking, there is no transfer of training. What has been called transfer, he claims, consists essentially of some degree of duplication of response in two situations. Such duplication takes place under three possible conditions: (1) when the content is similar, (2) when there is a similarity in method, and (3) when attitudes, or set, are comparable. Transfer occurs only when the similarity of the two tasks is such that the subject perceives them as a whole (285, pp. 264f.). Thus, the intelligence of the subject and the simplicity, or complexity, of the situation determine the amount of transfer.

The assertion that there is no transfer means that learning in situation

[2] James L. Mursell, *The Psychology of Secondary School Teaching*, rev. ed., New York: W. W. Norton & Company, Inc., 1939, p. 83.

A does not facilitate learning in situation B. Transfer implies that what is learned in situation A can be *shifted directly* to B only when the similarity (in content, method, or attitude) of the two situations is *perceived by the learner*. It is not the elements alone or the methods alone that condition transfer, according to the Gestalt view, but rather a combination of elements, teaching methods, *and* the learner's response. Pupils who learned neatness in doing arithmetic did not transfer that learning to another situation because they did not perceive the similarity of various situations. Obviously, they could not have had such perception if there had been no similarity. There can be little quarrel with the Gestaltists that behavior patterns are the result of *configurations of learnings*. These configurations include the organism (emotions, mentality, physical makeup), the situation, and the response (particularly insight) of the organism to the situation. Learning will remain at the original level unless an attempt is made to relate that learning to multiple situations. This view does not differ essentially from other views—it does add materially to the needed emphasis on understanding as an aspect of transfer.

Intelligence and Transfer. Since transfer is dependent upon perception of relationships between two situations, it is obvious that greater transfer will occur with more intelligent individuals. If transfer is automatic, it will be so because the learner is so intelligent that teachers do not have to indicate the aspects of similarity. This fact explains, in part, why some pupils develop constructive ideas for living in school while others seem to profit little from their academic experiences.

This view gives further justification to the assertion that we must teach for transfer. Let us assume that intelligence is a relatively fixed aspect of personality. Teachers are responsible for helping pupils see the opportunities for greater transfer than they are at present capable of seeing by themselves.

You, as a student, might well raise the question, "How can I make transfer work for me right now?" Remember that both the student and the instructor are part of the teaching-learning situation. The student's desire to learn effectively—to secure maximum transfer—is as important as the teacher who points the way. The more completely one learns in situation A, the greater the likelihood that he will perceive its relationships to situation B. Overlearning once more enters the picture. Material should be reviewed and reflected upon, generalizations should be sought, and attitudes should be examined. Lack of interest may reduce the drive devoted to a particular task (150). Persons who are interested enough to organize their work gain better results and in turn gain a feeling of success and greater confidence. Increased confidence improves the chances for coping with the next situation. Hence, a chain of helpful circumstances stem from interest grounded in attitudes, ideals, and experiences.

Transfer can no more be reduced to one or two factors than can learning in general.

Repudiation of the theory of mental discipline means that we no longer depend on the idea that the mind is improved by rigorous exercise. But the use that we make of the mentality we possess is influenced by our particular level of aspiration. We can seek through steady application to gain those common elements that make for transfer. We can analyze the source of our attitudes and try to improve those that hinder maximum effectiveness. We can actively seek to perceive relationships. We can ask ourselves questions that will stimulate active response instead of passively accepting new areas of experience. The mistake made by both teachers and pupils in learning material verbatim, without comprehension, can be avoided. The secret of effective education resides in establishing those conditions which promote maximum transfer.

TEACHING FOR THE TRANSFER OF LEARNING

Evidence clearly indicates that learning in one situation can, in certain circumstances, facilitate learning and adjustment in other settings. Practical questions such as the following have been raised about the circumstances in which maximum transfer will take place: "What teaching methods will be most productive of transfer?" "What subjects will contribute most to transfer?" and "What do we want to transfer, and to what should it be transferred?" This section is devoted to representative and suggestive answers to these basic questions.

Teaching Methods and Transfer. All the questions indicated above pertain to methods of teaching. Subjects which seem to have great transfer value may actually have relatively little such value because of the methods by which they are taught. What is to be transferred, and to what, *must be a consideration in determining instructional techniques.* The aims and methods of teaching are then the core of the problem of securing maximum transfer.

1. Significance of aims. Previous chapters have indicated that clearly defined aims are conducive to effective learning. The learner must know where he is going. Goals are even more important for the teacher because he must aid the learner in obtaining a clear perception of the objectives of learning. In all schoolwork there should be concern for the attitudes the learner develops—he should be confident, he should be open-minded, he should be eager for practical knowledge. Good work habits, such as system, thoroughness, perseverance, and determination, should be emphasized. There should be an emphasis on the practical; *i.e.*, knowledge and attitudes that will help one solve problems of adjustment both in and out of school.

2. The role of understanding. We have seen that transfer is greater with pupils of higher intelligence. It is important for the teacher to realize that intelligence is not indicated by the I.Q. (which is an indication of present rate of mental growth) but by mental age (M.A.). The lower the M.A. the more necessary it becomes to clarify principles, to help in the formulation of generalizations, and to indicate common factors in various situations. Students of the same chronological age will vary greatly in their need for specific examples, concrete illustrations, and precise explanation. It must be remembered that verbalizations are not equivalent to understanding.

Understanding is improved by dealing with real problems. Many school patrons and some teachers who know techniques but are not well grounded in theory may object to the minimizing of drill in the classroom. But it must be emphasized that understanding is incomplete without application. Time spent in building bird houses, making cookies for a school bazaar, visiting a museum, or discussing pupil government are productive of understanding. Learning by doing will have greater transfer values than learning that is limited to drill. There is no reason why familiarity with arithmetic, language usage, or historical data cannot be related to problems close to the life of the student.

3. Textbooks may point the way; but books will never be written that will always be appropriate to *the particular situation* faced by a given teacher. Fortunately, more and more textbooks deal with psychological factors in learning and pupil development. Even so, the teacher must determine his own points of emphasis.

3. Identity and similarity. The author had two years of Latin in high school. The study was confined strictly to declensions, conjugations, and translation. No attempt was made by the teacher to relate the study to English vocabulary; it was sufficient that a foreign language was required for graduation. One can still find today instances in which Latin, geometry, and algebra are not uniformly related to the lives and problems of students.

Recently the writer had an experienced teacher in an advanced educational-psychology class, in which the importance of relating mathematics to everyday life was discussed. Later he visited the teacher's class, and she departed from the text to discuss practical applications of algebraic processes. After the class she remarked, "I felt that I was stealing time from the students because we did not work any of the supplementary exercises on pages 97 to 101." She had failed to transfer learning from the psychology class to the algebra class, despite the emphasis.

These anecdotes are not intended as a plea for abandoning certain subject matter. The point is that unless the teacher can find and explain common elements in various types of subject matter then he certainly

should not be teaching the subject. A little practice and experience will soon reveal that the burden of teaching can be lightened and the joy of learning can be increased by emphasizing transfer values.

4. Overlearning as an aid to transfer. Overlearning is more than rote repetition. It includes seeing what has been learned in several settings. Citing many examples is a way of stressing overlearning. Relating older learning to more recent acquisitions fosters overlearning. Such activities are also distinct aids to obtaining more effective transfer. Partial or superficial learning is likely to lead to little transfer or even to negative transfer, and for maximum transfer thorough instruction is advantageous (124).

The teaching implications are clear. Time spent on overlearning is profitable in terms of the wider ramifications of learning. Review, drill, discussion of pertinent problems, and the presentation of examples, whether they are in arithmetic, social studies, or science, will increase the degree of learning that fosters transfer. One need not reflect very deeply on his own educational experiences to realize that the anxiety of teachers to cover subject matter has often resulted in superficial and incomplete learning. Teachers at all levels, from the primary grades to college, become concerned about completing the lesson. They shorten the learning process by resorting to lectures that leave the students bewildered. More time spent in elaborating on the materials that are covered will lead to better understanding and to overlearning and will increase the amount retained after a lapse of time. Better retention itself will lead to more transfer because the materials will be remembered for more new situations.

5. Emphasis on principles. The statement of a principle is a means of compressing many factors and conditions. A principle may consolidate a number of apparently discrete instances or practices into a single generalization. Because of the nature of the principle, it is not sufficient simply to state it, memorize it, or read it from a book. It is necessary to understand the many factors and instances that have gone into its formulation.

As teachers, we hope to see our instruction extend beyond the schoolhouse walls. Then we may call ourselves educators. An approach to this goal is to take advantage of the phenomenon of transfer by emphasizing the formation of generalizations. The pupil must see a number of situations to which a particular principle may be applied. The use of numerous examples will help. Variety of approach will help. Exceptions to the generalization may be noted.

The importance of stressing principles has immediate implications for you. Instead of studying to learn facts it will be well for you to seek and master the basic principles and generalizations which govern those

facts. One should develop a healthy respect for the so-called theory courses. Thus, the study of educational psychology should find its major justification in terms of underlying principles that will be operative in many and diverse situations. By attuning yourself now to the importance of this "representative" approach you will find it easier to direct your subsequent teaching to the significant items in learning.

6. Emphasis on attitudes and ideals. A sharp line of distinction cannot be drawn between principles and ideals. A principle may be thought to relate primarily to a subject-matter field, whereas an ideal has reference to the private life of the individual. Ideals are principles or generalizations that tend to shape the individual's course of activity. The teacher's work will include modifying ideals that extend beyond a particular subject area. Thus, many teachers draw up both tentative and final units of study and state precisely what attitudes and ideals they hope to promote. Such a statement may include the following:

a. Inculcating ideals of social cooperation
b. Increasing appreciation of music, art, drama, and literature
c. Developing a respect for methods of critical thinking
d. Establishing effective work habits and study skills
e. Expanding the pupil's range of constructive interests
f. Respecting differences of opinion and conflicting information
g. Learning to appreciate conditions of mental and physical health
h. Developing a wholesome philosophy of life

The statement of ideals and attitudes is only a beginning step. It is necessary that each ideal be broken down into precise and specific acts. Thus, ideals of social cooperation (point *a* above) might be thought of in specific acts such as courteous listening; working as a chairman or participant in a small group; keeping one's equipment out of the way of others; observing rules that are formulated for the safety and welfare of all; disregarding skin color, race, religion, and economic status; and respecting varied convictions. Willingness to help others and the observance of rules of etiquette will also receive attention. In addition, students and teachers should be thinking of wider applicability of these ideals to life away from school.

Experimental data indicate that such ideals as these cannot be achieved simply as a matter of ordinary procedures. Ideals must be a specific teaching objective (2). One needs to watch a class at work for only a short period to realize that ideals are not achieved automatically. Teachers who stress ideals foster such development in pupils. Those who depend upon "catching" ideals are likely to see considerable fumbling. Two aspects of the problem of transfer through ideals need to be emphatically stressed: (1) Ideals are among the more important outcomes of formal

schooling, and (2) the outcomes are more likely to be achieved if they are directly and specifically sought.

Subject Matter and Transfer. The majority of girls attending high school will become wives and mothers within a period of five years after graduation. Yet curriculums give the impression that courses in history or foreign language are more important than a course in "Marriage and Family Relationships." Study of family life is too important to be left to the phenomenon of transfer. The consensus is that an individual's personality and character are largely dependent upon his early home environment; therefore, a healthful family relationship is essential to children's mental health. Yet preparation for family responsibility too frequently fails to find a solid place in the curriculum.

This apparent digression from the subject is to emphasize an important fact about transfer: The greatest gain in any study will result from direct emphasis. Family-life education merits direct study. If ideals are important they should be a direct aim in teaching. The relationship between vocabulary and thinking shows that vocabulary merits direct study—transfer from foreign languages is not sufficient. Emphasis on thinking should not be limited to transfer from mathematics; it should be a direct concern of all teaching. All subjects should be taught so that students learn the art of raising and answering pertinent questions.

Curriculum making is a continuous process. A definitive description of a good course of study cannot be given. As times change, so too will the basic areas of the curriculum change. For the present, let us be concerned with some illustrations for making the curriculum of maximum usefulness.

Mathematics can, and should, be taught as a method of thinking. It involves fundamental operations *plus* basic working principles. A student who says, "I added because there were five numbers listed, and you can divide or subtract only where there are two numbers," obviously does not see the problem clearly. Moreover, teachers may use mathematics as an approach to problems which are not ordinarily considered to be mathematical. Both thinking and mathematics consist of making assumptions, gathering data, testing the hypothesis, and formulating a conclusion. Mathematics thus provides fertile ground for developing critical thinking, working skills, constructive interests, skill in gathering data, and love of knowledge.

Grammar should be studied from the standpoint of the expression of ideas and the facilitation of communication. Many teachers realize this but occasionally get lost in the maze of tense, mood, and voice. These are the concomitants of expression and communication; yet all too fre-

Transfer and Out-of-school Life. Experimental studies of transfer have dealt largely with the problem of the extent to which the study of subject A facilitates the study of subject B. Another problem, largely neglected in experimental investigations, is more important: the extent to which the study of any subject transfers to life out of school. No doubt some subjects make a greater contribution to daily living than do others. However, carefully selected teaching methods plus cooperatively determined specific objectives can increase the amount of transfer to the wider problems of life. We know that we learn by doing. We also know that we learn through experience. It is for this reason that educators state that education is more than preparation for living—education *is* life. Problems will naturally arise which are removed from the immediate environs of the school. "How to get along with my family," "How to use leisure time," "How to choose a career," and "How to improve my personality" are examples. More teachers should be concerned with them. All these problems have implications which may be drawn from science, mathematics, social studies, literature, and art. The bearing of these subjects on the life of the individual must be presented as clearly as possible.

Schoolwork need not be motivated only by the practical. Some scholars have presented the thesis that knowledge need not always be pursued with utilitarian values in mind. W. B. Cannon points out that important discoveries have been made by persons with inquisitive minds who were not looking for practical information but who, nevertheless, perceived important relationships in what they studied (47). Abraham Flexner, in an article titled "Usefulness of Useless Knowledge," calls attention to the fact that Einstein, Marconi, Pasteur, Erhlich and others were motivated by curiosity. Furthermore, they carried their work forward from a point which had been reached by others who were similarly curious. Future progress, too, will often come as the result of "intellectual adventuring" (95).

If the child or the adolescent asks, "What is the use for this or that?" we should try to answer him. On the other hand, there are pupils who are curious—their active mental processes drive them to seek answers *for the sake of obtaining answers.* We can encourage such pupils by permitting them to use the information they have acquired. We can praise their initiative and resourcefulness.

Despite this exception, maximum justification for schoolwork comes from combining significant learning with transfer values. If one cannot justify teaching a certain subject to his pupils, in terms of challenge or usefulness, he ought to give up teaching that subject. It is indeed a poor teacher who cannot find excellent reasons for teaching his subject.

SUMMARY

Psychological Principle	*Practical Application*
Learning is specific. We learn what we do.	Learning must include *both* processes (methods of solution) and products (factual data).
The theory of mental discipline has been discredited.	School subjects cannot be justified in terms of improving the mind, *i.e.*, of improving thinking or reasoning ability.
Transfer of learning takes place when there is similarity between two situations.	Teachers must identify and explain the factors which are common to different situations.
Transfer is automatic only to a limited degree.	Maximum transfer will be achieved when learning and teaching efforts are devoted to transfer.
Transfer is dependent upon teaching and learning methods.	*Transfer will be facilitated if* subjects are studied concurrently with one another.
Transfer is enhanced by emphasis on the formulation of generalizations.	Meanings, relationships, and recurrent factors should be emphasized in teaching and learning.
Emphasis on ideals tends to promote greater transfer.	Ideals operative in a given situation should be emphasized by being related to other circumstances.
Transfer is conditioned by a combination of the situation, the methods, and the learner's response.	*Control of the learning situation* must consider the subject, the approaches, and the learner's objectives.
The more intelligent the learner the greater will be the amount of transfer.	Particular effort must be expended by the teacher with average and below-average pupils to point out the opportunities for transfer.
Clearly defined aims for learning foster transfer.	Teacher and pupils should cooperatively define specific objectives.
The transfer values of some subjects are more readily apparent than those of others.	Curricular changes should be made in light of both immediate and future usefulness to the pupil.
The ultimate usefulness of transfer depends upon applicability to everyday life.	Teaching methods and curricular content should be determined by pupil needs.

PROBLEMS AND EXERCISES

1. Why do many schools continue to require the study of Latin, formal grammar, and abstract *mathematics* when experimental findings indicate that the supposed disciplinary results do not exist?

2. Suggest a number of specific things that you, as a student of educational psychology, could do to augment the transfer values of the course in educational psychology.

3. What curricular suggestions do you *have that would bring* about maximum transfer of learnings?

4. Suggest a number of things that might be done to broaden transfer values from the teaching of reading at the third-grade level.

5. In view of the phenomenon of negative transfer, what precautions should the teacher observe?

6. Draw from your own experience some examples of the transfer of learning.

7. What are the implications for transfer of the statement: "Learning is specific"?

8. Criticize or defend the statement "All school subjects should be taught with transfer values in mind."

9. Suggest a number of ways in which the teaching of chemistry could obtain greater transfer values to out-of-school life.

10. What are the relative transfer merits of rote learning and logical learning?

SUGGESTED ADDITIONAL READINGS

Anderson, G. L., Gertrude Whipple, and Robert Gilchrist, "The School as a Learning Laboratory," in *Learning and Instruction*, Forty-ninth Yearbook of the National Society for the Study of Education, Part I, pp. 336–348, distributed by University of Chicago Press, Chicago, 1950.

This chapter emphasizes the learner as the central concern of instruction. Classrooms should be not lesson-hearing rooms but laboratories for learning.

Bernard, Harold W., *Mental Hygiene for Classroom Teachers*, New York: McGraw-Hill Book Company, Inc., 1952, pp. 226–247.

Some questionable school practices are "subject matter set out to be learned," uniform grading, competitive examinations, marks, nonpromotion, homework, and authoritarianism. These practices, studied in the light of the present chapter, will be seen to be inimical to transfer.

Lange, Phil, in *Toward Better Teaching*, 1949 Yearbook, Association for Supervision and Curriculum Development, National Education Association, Washington, 1949, pp. 154–186.

This chapter is not about transfer but about helping pupils develop values. Concrete suggestions are given for achieving results which, in the present chapter, are discussed under the heading of transfer through ideals.

Orata, P. T., "Recent Research Studies on Transfer of Training, with Implications for Curriculum, Guidance, and Personnel Work," *Harvard Educational Review*, 11:359–378, 1941.

This summary of over 200 studies of transfer shows that rather uniformly there is "appreciable" to "considerable" transfer between various subjects. It is noteworthy that in recent years there has been a tendency to assert that the amount of transfer "depends on conditions."

AUDIO-VISUAL MATERIAL

Broader Concept of Method, Part II, Teachers and Pupils Planning and Working Together, McGraw-Hill Book Company, Inc., 330 West 42d St., New York 18. (19 min, BW, sd.)

Excellent for showing how high school pupils can formulate and execute a school or community project. Difficulties are lessened by the tactful help and guidance of the teacher. This shows schoolwork transferred to "life."

PART THREE

THE NATURE OF THE LEARNER

THE PUPIL IS the important consideration in the teaching-learning situation. But the pupils of today are not disembodied brains to be filled with textbook knowledge. In order to understand the pupil we must, of course, know something about his intelligence. We must also understand each pupil's uniqueness. Further, we must comprehend something of the "general" characteristics of pupils at various levels of development. Part III provides general and specific viewpoints of pupils as persons.

10

PERSONALITY AND ITS DEVELOPMENT

PERSONALITY, as a psychological term, refers to the total person, his way of reacting, and his degree of acceptance or rejection by others. The term is inclusive; every chapter in this book may be said to be concerned with some significant phase of personality. However, significant educational considerations can more easily be evaluated by specific reference to personality.

THE MEANING OF PERSONALITY

Definition. Personality takes in the whole individual, his physique, his temperament, his skills, his interests, his fears and hopes, his looks and feelings, and his habits and knowledge. Personality includes what the individual is today, what he hopes to be, and what he can be. It includes the manner in which he relates himself to others *and the way in which they react to him.* This, it can be seen, subjects personality to the influence of growth principles—hereditary potential, environmental factors, and personal reaction are involved, along with the processes of differentiation and integration. The personality of the pupil is not static. It is notably responsive to, among other things, peer contacts, teacher behavior, and other factors of classroom climate.

The foregoing definition indicates that when a teacher describes the personality of a pupil, or a fellow teacher, he is to some extent describing himself. He is probably portraying his own reaction more accurately than that of his subject. Thus, we would evaluate a teacher who characterizes Johnny as an ignorant, dirty, disobedient boy quite differently from the teacher who describes the same pupil as a slow-learner who is handicapped by an impoverished cultural background. The well-grounded teacher will seek to evaluate the social aspect of personality in terms of causative and contributing influences rather than in terms of personal reaction. Teachers should bear in mind that personality is a composite unit consisting of mental, emotional, physical, physiological, social, and individual factors.

Aspects of Personality. It would indeed be convenient if it were possible to make a definitive list of the most important personality aspects, but we must content ourselves by stating the general factors, though it must be remembered that in some cases one factor may outweigh the others.

1. Inherited factors. Inheritance sets limits beyond which the individual may not develop no matter how salutary the environment in which he lives. It is to be devoutly hoped that teachers will realize the existence of these limits and cease telling pupils that they can be or do anything they wish if they just work hard enough. Belief in this erroneous idea has caused a great deal of unnecessary frustration and heartbreak.

Belief in the limits imposed by heredity need not lead to resignation to the *status quo* in development. The truth is that though we accept the idea of limitation we do not know—nor is there any way of knowing—what those limits are. For example, an intelligence test does not indicate inherited potential; it merely indicates the present degree of development of that potential. If we accept the idea of limits then we shall be on the watch for indications that the pupil is being pushed and prompted beyond his potential (156, p. 116). These indications may manifest themselves in various forms of behavior: nail biting, sleeplessness, inattentiveness, frequent throat clearing, or outbursts of anger.

While the limits set by heredity for intellectual development seem rather definite the same cannot be said with respect to the amount of knowledge that can be acquired or the kind of social personality that is developed. It is possible for an individual with a given level of intellectual ability to acquire a wide range of information at that level. In fact, it often happens that what appears to be relatively superior intelligence is merely the possession of wide information of a rather simple sort. In the matter of sociality it seems that the predominant factor with which teachers must be concerned is environment. The ability to get along with others is largely a learned characteristic.

The interaction between heredity and environment is clearly illustrated by the view that is currently taken of the famous study of the Jukes family made in 1874 by R. L. Dugdale. He found that of 1,200 descendants from a given marriage (for 709 of whom exact information was available) most were criminals, paupers, and dependents. The large majority also revealed low physical standards (77). At first this degeneracy was attributed to heredity, but it is now considered important that these people, beside having poor heredity, lived in a poor cultural environment. A similar study of the descendants of Martin Kallikak (a fictitious name), a Revolutionary soldier who had children by a feeble-minded barmaid, was also believed to indicate the role of heredity. Of 480 descendants, 143 were feeble-minded, and many were sexually im-

moral, intemperate, delinquent, or criminal. It is today deemed important that the role of environment be considered along with the role played by heredity.

Studies of gifted individuals follow much the same line. The descendants of Jonathan Edwards and Sarah Pierpont were, over a period of 200 years, college presidents, professors, authors, lawyers, judges, and statesmen to a greater extent than could be attributed to chance (50, p. 27). Aside from the factor of heredity, these individuals had the advantages of stable homes, economic advantages, and excellent educational opportunities.

2. Glandular influences. There is no doubt that many of the desirable and undesirable qualities of personality can be attributed to glandular balance. The glands of internal secretion, the endocrine glands such as the thyroid, pituitary, pancreas, gonads, and adrenals, influence personality traits markedly. Each of these glands pours secretions known as hormones directly into the bloodstream. Unless these secretions are available in delicately balanced proportions the whole physical system is affected and marked deviations in appearance, growth processes, emotional control, and intelligence behavior may result.

The thyroids regulate oxygen metabolism and affect both bodily growth and intellectual development. It has been shown that too little thyroxine may result in feeble-mindedness, whereas a proper supply may contribute to giftedness. Pronounced underactivity of the thyroids, called hypothyroidism, may cause cretinism. Overactivity, or hyperthyroidism, may cause nervous instability, sleeplessness, and a tendency to overreact to stimuli. These are the outstanding effects. In addition, the thyroid influences the activity of other glands.

The pituitary gland is known as the "master gland" because of its direct activity as well as its role in regulating the activity of other glands. Its major role lies in the control of growth processes. A deficiency of the growth hormone of the pituitary gland may cause dwarfism, while an excess may cause gigantism.

The pancreas produces the hormone insulin, which regulates the utilization of sugar by the body and also influences digestion in general. The effects of this gland on personality are perhaps more indirect.

The hormones of the sex glands are the androgens (male) and the estrogens and progestin (female). These hormones are produced by both the testes and the ovaries but, in proper sex development, occur in different proportions in the male and female. Appearance of secondary sex characteristics in males and females (pubic hair, change of voice, development of the breasts) is dependent upon the sex hormones.

The adrenal glands secrete two hormones. One of these, adrenaline, reinforces the action of the sympathetic nervous system and thus plays

a major role in emotional behavior. The other hormone, cortin, is important in stability of the nervous system and balanced sexual development.

Other glands of internal secretion are the pineal, parathyroid, and thymus glands. The parathyroids control calcium metabolism and affect growth processes, emotional stability, and physical vitality. Little is known about the role of the pineal and thymus glands. They seem to have no function of special importance in terms of personality development (198, p. 471). Present knowledge indicates that their role is to offset excessive activity of other glands at certain periods of life.

Glandular therapy is, of course, a medical problem. The teacher's role is to recognize that glands play an important part in pupil behavior. Knowledge of the operation and function of the endocrine glands is far from complete, but the use of such information as we possess has resulted in momentous transformations of personality (184, p. 3).

3. Physique and personality. A problem which interested students of personality even before psychology was recognized as a scientific study is the relationship between physical build and personality. E. Kretschmer postulated the theory that body build formed the basis for certain personality types. According to his view the thickset, round person (the so-called pyknic body type) was gay, good-humored, and happy. The lean, underdeveloped person (the asthenic body type) was polite, sensitive, and cold. The athletic, strong, well-developed, and symmetrical body type had a personality midway between those of the pyknic and asthenic types. Still another body type, the dysplastic, fits none of the foregoing categories because of asymmetrical development; *e.g.*, thickset upper body and lean and slight, or muscular, lower body. He is a mixed type (162). Research supports this theory to a limited extent, but objections are made to it because it tends to place human beings in fixed categories.

The appeal of Kretschmer's theory, and similar theories, probably lies in the urgent need to understand personality and thus open the way to improved adjustment. Physique is, no doubt, related to personality but not so consistently as to allow definite personality predictions for individuals. Endocrine disturbances do manifest themselves in physique and social behavior, as is demonstrated in mongoloids and cretins. There *may be* other relationships. The fat boy may be good-humored *because* he can't fight—not because he is fat.

William H. Sheldon has postulated three major body builds—the endomorph (the obese person with abdominal predominance), the ectomorph (the lean, delicate individual with large surface in relation to weight), and the mesomorph (the athletic type with a predominance of bone and

muscle). Briefly the personality typical of the *extremes* of each of these types is described as follows:

a. The endomorph is inclined to physical gratification, is a pleasure lover, and enjoys association with others.

b. The ectomorph is self-sufficient, enjoys intellectual pursuits, and has a sensitive nature.

c. The mesomorph enjoys physical exertion, is energetic, and loves competition. An interesting feature of Sheldon's theory is that he provides for continuous variation in type rather than postulating a trimodal distribution of body types and personality. A given individual is considered to have one or more characteristics of each type; for example, an extreme endomorph is a 7-1-1, a 1 being assigned for minimum mesomorph and ectomorph qualities, and a 7 for maximum features of the type concerned. An extreme mesomorph would be a 1-7-1, and an extreme ectomorph a 1-1-7. The total is not always 9; a person might be a 2-7-1, a 3-4-3, or some other index combination of less than extreme proportion or a rather balanced distribution of morphological measurements (241). An apparent defect in the theory is that each of us has seen heavy-set people (endomorphs) who are scholarly and introverted; thin persons (ectomorphs) who are lively and active; and bony, muscular individuals (mesomorphs) who are passive and phlegmatic. Another unanswered question is whether or not the development of a personality at variance with bodily predisposition has not been purchased at the cost of stability and sound integration.

In summary, the many unanswered questions about the relationship between body build and personality make it imperative that teachers take care not to categorize pupils on the basis of superficial observation of their physical characteristics.

4. Environment and personality. In addition to heredity, glandular balance, and body build, the environment, too, helps determine personality development. Modern advances in medicine and hygiene have influenced environment and, undoubtedly, personality. Governmental, community, and religious institutions and local customs and mores play dynamic roles in forming personality. The more insistent influences from the standpoint of the teacher are probably the pupil's home, his socioeconomic status, and the community's educational institutions.

Environment may serve to counteract much of the influence of heredity. One study shows that, depending on the environment, children may be either like their parents or develop diametrically opposed characteristics (257). For instance, children reared in homes where parents are exceedingly dominating tend either to be excessively submissive or to develop patterns of behavior quite like their parents. This finding is in accord with the widespread belief of child specialists and psychologists

that the home is of prime importance in shaping the personality characteristics of children. If a favorable home environment cannot be achieved then the duty of the school is to compensate for the child's deficiencies in love, security, acceptance, or tolerance.

Teachers must overcome the misconception that there is an average, or typical, home. The socioeconomic conditions that prevail in any community make for vastly different social goals, ideals, and attitudes in various homes (65). There are, for instance, different vocational goals and different attitudes toward education. Some parents, for example, do not consider a college education for their children, while others tacitly assume that college is an integral part of living. There are different attitudes toward such problems as drinking, morality, religion, and racial relations. Teachers of civics, sociology, and history can quickly discern differences in political attitudes. Some pupils will stoutly defend paternalism in government, while others will as vehemently support free enterprise.

By the time the student enters high school, his social class has gone a long way in determining the "path of life" he will choose. The school provides a common educational background and some common experiences. But the social lines of the community shape what the particular child *chooses* to learn. A teacher can teach the same material to all pupils, but the pupils will not learn the same things. What one learns is not determined solely by his status in society, but it is certainly influenced by that status (279, p. 15).

While recognizing the power of the culture to shape personality, we must not forget the influence of other factors in the growth process. The hope for individual initiative and for personal creativeness always remains. Many individuals have risen above the restrictions of their social status. Teachers have helped them do so by recognizing their ability and encouraging them to view that ability as both a responsibility and an opportunity. This, in fact, is the finest skill of great teachers. It is the author's conviction that teachers will learn a great deal that is of vital significance in their teaching by studying the class structure and social status of their communities. Certainly one of the more pressing psychological problems for realistic teachers lies in the need to abandon the assumption that the home and socioeconomic status of their pupils are similar to their own.

Many studies have shown the influence of educators in improving community life. Teachers have been known to improve nutritional standards in their communities, to persuade citizens to beautify homes and yards, and to encourage sanitation projects. But the school's influence by no means stops there. An example is the status study of personality made of Locust Point, a section of Baltimore, Maryland. In a

1914 survey it was found that 166 out of 1,502 school children were sufficiently subnormal and poorly adjusted that only discouraging prophecies about their future seemed to be realistic. It was expected that these pupils would in large numbers become delinquent, alcoholic, feebleminded, or dependent. But steps were taken to avoid these results. A school plant was erected that was to serve as the social, educational, and recreational center of the community. Curricular modifications were made to fit the needs and developmental status of the children. Teachers were carefully selected to provide kindly and realistic education. The follow-up study, made seventeen years later, showed highly encouraging results. Of the 166 pupils in the original survey, data were secured on 122. Three-fourths of that number were entirely self-supporting and adequately adjusted. The incidence of illegitimacy, prostitution, delinquency, and dependency was less than might have been expected in a depression period (90).

It is possible that the prognosis for Locust Point was incorrect. Some of the children might have made satisfactory adjustments as they matured. But the data point to the influence of educational philosophy and teacher personality. The director of the study, Dr. Ruth Fairbank, gave the teachers most of the credit for the transformation of personalities. The teachers made lasting impressions on their pupils in terms of moral conduct, social behavior, attitudes toward work, and self-respect. Sympathetic to the needs of their pupils, they understood the basic importance of understanding individuals. Moreover, they had confidence in their ability to mold personality.

Thus, though we must recognize the roles of heredity, physique, glandular function, and social status in the formation of personality, the role of the school and the teachers is also considerable.

5. Personal response. Two individuals look at the same stimuli in different ways; they react to the same handicaps, or opportunities, in different manners. The concept of personal response has been incorporated into the so-called "triangle of life" (see Fig. 12).

This three-sided aspect of personality suggests that heredity and environment do not alone shape the product. They are welded together as interdependent influences by the way the individual reacts to what he is and has. As a practical method of motivation, the teacher might emphasize to pupils that their level of aspiration is as important as are the obstacles they face. What one does with what he has is of real consequence. Two individuals with apparently the same ability and little apparent difference in environment may differ remarkably in their response, which again indicates that potential is realized in varying degrees.

Stimulating well-directed and vigorous pupil responses is a broad educational problem. Teachers can encourage pupils to make maximum use

of what they have and to view discouraging environmental conditions as a challenge to growth.

Misconceptions about Personality. There are a few misconceptions about personality which deserve attention because they can, and sometimes do, result in errors of judgment and injustice to individual pupils.

There are some who believe that the color of one's hair is indicative of temperament. It is believed, for instance, that red hair indicates a volatile temper. There is actually no causal connection whatever. But if

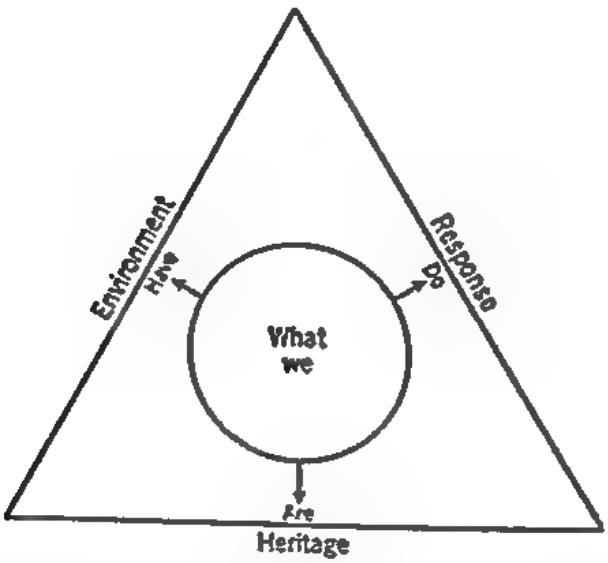

FIG. 12. The triangle of life. (From H. E. Walter, *Genetics*, New York: The Macmillan Company, 1930, p. 4. By permission of the publishers.)

a red-haired child from his earliest memories is told that he will have a quick temper, he will come to believe it. He thus has an excuse for failing to develop emotional control. He tends to live up to what is expected of him. It is therefore advisable to discard the belief—to avoid even humorous references to this erroneous conception in the presence of children.

A misconception that one occasionally hears has to do with a relationship between size and intelligence. The expressions "He's a big dumb ox" or "Strong back, weak mind" are uttered with apparent conviction. Actually, there is a slight *positive* correlation between size and intelligence—the larger one is for his age the more likely he is to be above average in mentality. But the correlation is so small that prediction in individual instances has no justifiable basis. Gifted children are taller and heavier, *on the average*, than their classmates. They are also less likely to be myopic, are less likely to have hearing difficulty, have greater vigor, are less susceptible to disease, and are better adjusted socially (261, pp. 20*f*.). But no one of these characteristics is sufficient basis for an inference about intelligence for a single individual. The differences

among the traits of gifted, or of average, children, as individuals in a group are greater than the differences *between* the groups.

Closely related to the misconception about size and intelligence is the erroneous notion that one can tell by looking at an individual how bright he is. "He's a smart-looking youngster" or "See those bright, intelligent eyes" are expressions frequently heard. Such ideas are usually fallacious. It does happen that clinical types of feeble-mindedness show characteristic physical and facial appearance. But the typical youngster in school is quite likely to suffer an injustice if the teacher attempts to predict intelligence from his appearance. Teachers acquire the ability to make somewhat accurate judgments about the intelligence of children, but they do so on the basis of their knowledge of the pupils' capabilities. Experienced teachers have been tested in this respect by being asked to judge the I.Q.s of children from photographs. Not only did the teachers vary widely in the estimates they made, but it has been found that the average error in judging all the youngsters was as much as 25 to 30 I.Q. points. Judgments formed on any basis other than intelligence tests supplemented by observation of behavior are likely to be completely unreliable.

The idea that character can be analyzed from handwriting is another fallacious notion. This procedure may have a place in parlor entertainment, but it merits no consideration in education. Handwriting is much more likely to be influenced by bone structure and muscular organization than by underlying personality trends. Of course the type of handwriting instruction the pupil receives will also have an influence.

Another misconception that is too widely current is that intellectual and character traits are products of race or nationality. Any such traits are likely to be due to environmental conditions under which individuals of the race have lived. They are not innate characteristics.

GUIDING PERSONALITY DEVELOPMENT

The Limits of Individual Development. Among the many unanswered questions regarding personality development one of the most important is, "What are the limits of personality growth?" Daily observation of the people around us leads to the conclusion that there are great differences in the extent and direction of personality development. If environmental influences could be the same for all there would still be marked differences. The practical solution to this apparent dilemma is that teachers must seek to evaluate potential from present development and assume that present development has not yet achieved the maximum.

Shortly after birth babies begin to reveal prevailing moods. Some smile easily and are readily pleased. Others are characteristically sober. Later years show a continuation of these traits. Even drastic changes in

environmental influences may not change the fundamental trends, though the manifestation of the trend may change. For example, on being exposed to a happier environment a sober child may show a tendency to smile more readily than he did formerly, but he still may not smile as readily as another child who is in no happier circumstances.

The modifiability of personality traits has been experimentally investigated, and the results are encouraging. Lois Jack studied the trait of ascendance, recognizing that there is a kind of "pecking order" in child behavior. Children were brought by pairs into a play situation consisting of a limited number of sand toys. Ascendant behavior was judged from (1) verbally demanding materials, (2) forcefully trying to get toys, (3) obtaining materials, (4) snatching materials, (5) directing the other child's play, (6) securing compliance of the other child, (7) ordering the other child about, and (8) providing the pattern which the other child imitated. The more submissive children were given special training in using the toys in order to build up their confidence. As they gained in self-confidence they became more ascendant in comparable experimental situations (136).

This experiment was repeated by D. V. Mummery, who verified the earlier conclusion that self-confidence underlies manifestation of the trait of ascendance. In this study, a "wholesome degree" of ascendance was emphasized; that is, the child was not encouraged to be aggressive or dominant, but the experiment was planned to discourage submission (197).

The teacher who wants to build a child's confidence may do so by helping him build a skill. If a pupil develops feelings of inferiority because of academic difficulties he should be given a chance to demonstrate the skills he has. Thus, one poor student who declared he hated schoolwork asserted one day that he could write a better song than the one the class was singing. His teacher encouraged him to try it. He did and the song was good. It was sung by his classmates, and thenceforth he took a more confident and aggressive part in classwork. These experiments and experiences underline the advisability of the teacher's looking for opportunities to give each child a feeling of success and worth.

School Influences and Personality. Without doubt the most important influence on personality in the school is the teacher. He is the one who sets the tone of the classroom—who establishes the mood of the group. Some specific ways in which the teacher himself can create problems have been mentioned by Charlotte Buhler. A dominating teacher may force an already shy child into further withdrawal. A teacher with social-class prejudice may generate resistive attitudes on the part of those children. Teachers who are "colorless, drab" personalities may cause pupils to be restive and inattentive (40, pp. 162f.).

Teachers who tend to be too sure of their knowledge should exercise humility and stimulate pupils to question and challenge views. As is shown in the chapter on Cultural Influences, teachers must guard against thinking there is no "right" outside their own social sphere. They must realize that "color" in personality stems to a marked degree from their confidence, competence, and interest in teaching.

The teacher's effect on pupil personality can work untold good. A juvenile officer, speaking before a civic group, stated that during the Second World War a certain West Coast city had not experienced the rise in delinquency that was characteristic of other cities of comparable size. He concluded, "This is due to two teachers who seem to have the faculty of detecting what we call predelinquent behavior and the ability to do something about it."

The role of the teacher is well illustrated in the study of Locust Point,[1] referred to earlier in the chapter.

> Here, again, we find the effect of contacts in those early years with teachers who were not convictionless, but aggressively determined not to lose an opportunity to inculcate good old-fashioned morality, embodying principles of decency and respect for individual personality and clean-mindedness. The most striking result of this survey is to be found in the lasting impression made on these people in childhood by one of the teachers who came in closest contact with them. Science has no tests to evaluate the influence of personality, but the tests of life on growth and development tell the story.

It is necessary for the teacher to live a well-rounded life. He must satisfy his own basic needs before he can be of maximum help to his pupils. Only then can he bring to the classroom the happy, confident, optimistic personality that will have the most beneficent influence on the personality development of children.

The Influence of the Curriculum. The decision about what should be included in the program of studies should probably be left to curriculum experts. However, guidance in those decisions can be given by educational psychologists. Regardless of the specific subjects that are finally chosen, generalizations can be formulated from the standpoint of psychology: (1) The subjects should be meaningful to the pupils, and (2) the learning tasks should be within the mental and physical capacity of the pupil.

No final decision can be made about appropriate learning tasks for children because of the wide individual differences in pupils. However, we can be on the lookout for inappropriate learning demands.

[1] Ruth E. Fairbank, "The Subnormal Child—Seventeen Years After," *Mental Hygiene*, 17:207, April, 1933.

The curriculum must be appropriate to the child in order for him to approach his potential. For example, the parents of a feeble-minded girl dreaded having her placed in a special class for mentally retarded children. They felt that she needed the stimulation of brighter children. They had scolded her and tried to shame her to become more like her normal older sister. After repeated conferences with the psychologist and the psychiatrist they allowed her to be placed in the "Children with Retarded Mental Development" class. The parents learned that children with less intelligence than their daughter knew more than she because the instruction and curriculum were appropriate and the children could compete on their own level (146).

Competition and Cooperation. Competition must be adroitly handled by the teacher if personality is to benefit. From the personal standpoint it is necessary that competition must match adversaries of equal ability or status. Competition in which success or failure is inevitable for one of the opponents is beneficial neither to the winner nor to the loser. From the social standpoint it is desirable that pupils get experience in cooperative endeavor so that they may feel the thrill of group accomplishment, so that their individual talents can be used most advantageously, and so that they will develop respect for the importance of others.

Democratic Procedures. Democratic procedures in the classroom have beneficial effects on personality development. It might be well to discuss here the concept of democracy as it relates to education. The ideas of liberty, individual welfare, fraternity, equality before the law, and justice are familiar to all. But some aspects of democracy need interpretation. Liberty and freedom cannot be isolated from personal responsibility. While individual welfare is important, this welfare cannot be allowed to interfere with the collective welfare of larger social groups. Equality before the law and equality of opportunity may not be identical concepts. If equality of opportunity means that all adults or all school children are given the same work and the same responsibility, then the psychological concept of individual differences would deny equality. Neither adults nor children are capable of doing the same tasks with equal proficiency. It might be well to interpret the educational implications of "equality of opportunity" as "equality of opportunity commensurate with the individual's ability to profit from that opportunity."

If children are to develop the quality of independence that is valued so highly in our society they must be given freedom to think, choose, and act on their own. This, however, must not be confused with lack of direction by the teacher. Democracy, among other things, also means the delegation of responsibility and the development of specialization. Teachers have specialized in their training and experience for giving responsible direction and should not neglect to use their wisdom for the

benefit of the pupils. However, as pupils grow, as they gain experience and knowledge, they should be allowed more freedom in self-direction.

Another aspect of democracy which has great value for wholesome personality development is the concept of the intrinsic worth of the individual. To the extent that the teacher actively recognizes the worth of each child he will be enhancing the pupil's feeling of personal significance and security. Among other things, this will mean that a pupil should be commended for the effort he exerts and for the quality of work which is proportionate to his present ability. To say to Sue, "See how neat and well behaved Sally is," is more likely to foster feelings of personal insignificance or resentment toward the teacher or Sally than it is to provide Sue with an incentive for improvement. Giving appropriate praise, taking time to listen to pupils, and showing interest in their comments and activities are classroom essentials.

To be a democratic citizen implies that each individual has a part to play that is significant to others. The theory that there should be no social isolates is thus based on psychological truth as well as on cultural mores. The use of sociograms (see page 304) is one technique by which the teacher can encourage activities that will help involve all the children. Encouraging children to work in groups and providing them with opportunities to do so is in accord with experimental findings. It has been found that at approximately ten years of age boys become less interested in personal achievement than in the success of the team on which they are playing (101). Much schoolwork can be better oriented if greater emphasis is placed on group accomplishment rather than upon competitive systems of grading that reward only personal achievement.

The Teacher's View of Problems. A big step forward in helping pupils build more healthy personalities will be taken when all teachers understand so-called problem behavior. E. K. Wickman in a still widely quoted study showed that teachers were more likely to consider whispering, inattentiveness, carelessness in work, tattling, and disorderliness as serious problems and less likely to be concerned about shyness, withdrawal, and daydreaming (288). Psychiatrists, on the other hand, were inclined to take an opposite view. They considered that the more serious problems are shyness, withdrawal and daydreaming. Follow-up studies indicate that in recent years teachers have come to see more clearly the serious implications of such behavior (84), though there is still much room for improvement. The contemporary view is that isolated behavior, whether it be shyness or bullying, should not be considered too seriously and that the child should be viewed in his total behavior system. Any one trait may be of considerable importance, but its significance cannot be determined in isolation. It is the frequency of manifestation, and combination with other traits to form a disturbed pattern of

behavior, that is important and the child, not the trait, that should be watched (137).

Teachers are in a better position to help personality development when they recognize what is important and significant and what might better be overlooked. They need to know that the child who reveals several atypical behaviors and does so consistently is more in need of attention than one who makes a gross but rare misstep. Moreover, they must realize that the behavior is a symptom of difficulty and look for the source. Again, appropriate help can best be given when the teacher knows something of the biological, medical, social, and educational history of the child (102). Knowledge of these factors will often lead to the discovery of basic needs which are not being fulfilled.

SUMMARY

Psychological Principle	*Practical Application*
Heredity determines the limits for development.	The job of teachers is to help the child realize a maximum part of his inherited potential.
Glands and physique are integral parts of the total personality.	Teachers should be on the watch for physical deviations that would complicate the process of adjustment.
Misconception: Big people are unintelligent.	The chronological age and the mental age of children are more important than physical size.
Misconception: Handwriting reveals character.	Evaluate character on the basis of over-all conduct—not on discrete traits.
Misconception: There are characteristic racial differences in personality.	Give each child a chance to demonstrate his character and ability.
There are limits to the extent to which personality may develop.	Avoid pushing, prompting, and forcing a child to develop at an unnatural rate.
The teacher's personality quickly and markedly affects the pupil's personality.	The teacher should give attention to his own living regime in order to be happy and confident in the classroom.
School curricula are factors in personality development.	School work should be appropriate and meaningful to each child.
Democratic living contributes much to wholesome personality development.	Recognize the intrinsic worth of each child. Provide opportunities for peer relationships. Encourage the development of responsibility and self-direction.
The view teachers take of problem behavior often contrasts with the view taken by psychiatrists.	Teachers must learn that isolated symptoms are less significant than patterns of behavior and seek to find the causes of atypical behavior.

PROBLEMS AND EXERCISES

1. How does the psychological definition of personality differ from the popular concept? Which view did you have prior to your study of educational psychology?
2. Cite some examples which seem to show that environment is of primary importance in a particular growth process; that heredity is of primary importance in others.
3. How do popular misconceptions regarding personality originate?
4. How would the continuation of these misconceptions influence teaching procedures?
5. How can one tell that the limits of development are being reached?
6. Describe some very recently observed instances in which the personality of the teacher has affected the behavior of pupils. If the effect was negative, how might the situation have been improved?
7. Describe the manner in which some subject you have studied has influenced your behavior or attitude.
8. Suggest changes in teacher education which might serve to improve the personality of prospective teachers.
9. Outline a regime for yourself in your present situation that might enhance your enjoyment of daily life.

SUGGESTED ADDITIONAL READINGS

Fairbank, Ruth E., "The Subnormal Child–Seventeen Years After," *Mental Hygiene*, 17:177–208, April, 1933.

This article shows in interesting detail how a good school and carefully selected, sympathetic teachers can influence the development of robust personality in children.

Fostering Mental Health in Our Schools, Washington: Association for Supervision and Curriculum Development, National Education Association, 1950, pp. 203–225.

The constructive use of sociometric grouping is dealt with in this chapter. What a sociometric test is and how it can be used is explained in detail so that a beginner may construct sociograms for his own class.

Hymes, James L., Jr., *Teacher Listen–The Children Speak . . .*, New York: New York Committee on Mental Hygiene of the State Charities Aid Association, 1949.

In this booklet, the author stresses the point that teachers have a tremendous power to shape the lives of children. If this shaping is to be helpful, it must be based on a knowledge of the pupil's present personality orientation.

Washburne, John N., "Personality Development of the Adolescent," in Paul A. Witty and C. E. Skinner (eds.), *Mental Hygiene in Modern Education*, New York: Rinehart & Company, Inc., 1939. pp. 184–238.

The author of this chapter presents a unique approach to the understanding of personality. The discussion centers about the fundamental needs of mastery, adaptation, arousal, and repose.

AUDIO-VISUAL MATERIAL

Life with Junior, March of Time, 369 Lexington Ave., New York 17. (18 min, BW, sd.)

Junior is followed through a typical day, which reveals his interests and problems. Acceptance of a new brother and refusing to eat are among the situations shown.

Meeting Emotional Needs of Childhood: The Groundwork of Democracy, New York University Film Library, 26 Washington Square, New York 20. (33 min, BW, sd.)

This shows the kind of attitude toward people and the sense of community responsibility the child is developing as he grows toward adulthood.

II

THE NATURE AND NURTURE OF INTELLIGENCE

MAN is distinguished from the animal largely because of his intelligence. Man's brain is so highly developed that he can think abstractly, in the absence of concrete objects or situations. He can anticipate problems and give them attention before they become acute.

But, of course, no problem is finally and ultimately solved. The basic problem of education is, without doubt, a matter of directing intelligence to the improvement of perplexing situations. There are some who say that emotional control and direction are the big tasks of education. But analysis seems to indicate that if emotion itself is to be wisely controlled it must be through directing intelligence. Hence, it seems that there is nothing more important for the teacher to understand than the nature and nurture of intelligence.

THE CONCEPT OF INTELLIGENCE

Definitions of Intelligence. Several definitions of intelligence are summarized below.

L. M. Terman states that intelligence is the ability to do abstract thinking.[1] That is, through the manipulation of symbols (largely words) the intelligent person is able to think about and deal with things and ideas without the material presence of objects. Intelligence is thus the ability to see relationships and to solve problems (262).

E. L. Thorndike states that intelligence is the ability to make good responses and is demonstrated by the capacity to deal effectively with novel situations. Just as there are different kinds of situations there are also different patterns of intelligence—abstract, mechanical, or social

[1] Most of the widely used intelligence tests (both individual and group) resemble to a greater or lesser degree the Stanford revision (Terman's work) of the Simon-Binet tests. Many of the norms established are compared with the norms for the Stanford test.

(268, p. 22). For example, an individual who is adept in mechanical pursuits is not necessarily endowed with social adeptness.

C. E. Spearmen postulated the theory that intelligence was composed of a general factor (*g*), a form of general mental energy, and several specific factors (*s*), which were operative in particular situations. The *g* factor of intelligence is present in the specific (*s*) factors but is not equally dominant in all specific factors (249, p. 222).

L. L. Thurstone presents the idea that intelligence consists of primary abilities, such as visualization, perception, numerical, reasoning, verbal, memory, and problem solving (269).

The various definitions above may be summarized in the statement that intelligence is the ability to make facile adjustments to one's environment.

Intelligence is also defined as "that which intelligence tests measure." This statement is unsatisfactory and absurd. It is true only in the sense that "measured" intelligence is the result of a set of relatively artificial performances. But those who formulate intelligence tests have from the beginning sought to correlate and corroborate what they found in the tests with life situations. Intelligence-test ratings do often correlate positively, and sometimes highly, with demonstrated ability to do a job, to do academic work, and to solve problems and with the judgment of experts who have observed the behavior of the testees. Intelligence-test items are not merely arbitrary questions but are representative samples designed to test the individual's total performance.

It will be noted that all the definitions of intelligence given above mention or infer the matter of adjustment. In this connection one further definition may be given: "Intelligence, then, may be defined as *a composite or organization of abilities to learn, to grasp broad and subtle facts, especially abstract facts, with alertness and accuracy, to exercise mental control, and to display flexibility and ingenuity in seeking the solution of problems.*" [2]

The "Constant I.Q." Theory. A rather sharp controversy developed in the middle 1930's between adherents to the theory of the "constant I.Q." and those to the theory of the "wandering I.Q." Support for the constant I.Q. hypothesis is received from the typical data secured from intelligence testing. By and large, repeated tests of the same individual over a period of time indicate that mental growth is fairly constant, thus giving rise to the same indicated I.Q. on repeated measurements. This may be seen from the graphical representation shown in Fig. 13. Repeated testing will usually not yield *exactly* the same I.Q. score for a

[2] Arthur I. Gates, Arthur T. Jersild, T. R. McConnell, and Robert G. Challman, *Educational Psychology*, 3d ed., New York: The Macmillan Company, 1950, p. 225. Used by permission.

given pupil but will show slight fluctuations, *i.e.*, within a range of about ten points. Thus, a child with an I.Q. of 95 on one test is considered to have a constant I.Q. if scores on other tests are 90, 93, and 101.

Such variations as these have been noted since the formulation of the first intelligence test and have been attributed to the limitations of the

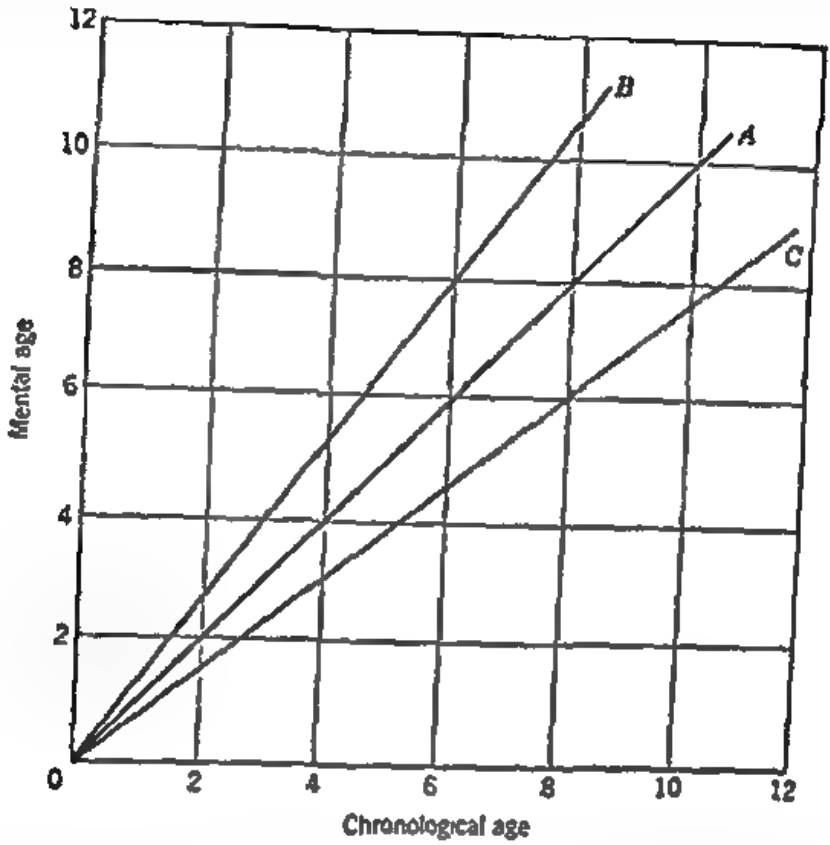

FIG. 13. Schematic portrayal of constant I.Q. Subject *A* grows at the rate of two years mentally for each two years of chronological age. According to the formula M.A./C.A. × 100 = I.Q., his I.Q. is 100 at two, four, six, etc., years. Subject *B* grows at the rate of twelve months mentally for each chronological period of nine months (four years mentally in three calendar years, etc.) and according to the formula has an I.Q. of 133 at any given age. Subject C grows at the rate of nine months mentally for each calendar year (three years' mental growth on his fourth birthday) and has an I.Q. of 75.

testing instrument or to such factors as motivation or application. Fluctuations were not considered to be indicative of a real change in mental ability. Adherents to the wandering I.Q. theory are in agreement up to this point. But fluctuations beyond the range of ten I.Q. points have also been noted in many instances. Whether or not the varying scores indicate *a change in intelligence* is the issue.

The constant I.Q. group maintains that the fluctuations are due to the inadequacies of the test, to the testee's lack of understanding of earlier tests, or to varying degrees of motivation or willingness. The wandering

I.Q. group believes that fluctuations beyond 10 I.Q. points are indicative of a real change in the rate of mental growth. The higher score, they feel, is an indication of increased ability to adjust to one's environment.

Many studies have been conducted to determine the possibility of discovering factors that may stimulate a change in the rate of mental growth. Some report no significant change. Others provide encouragement for the idea that mental ability involves something more than the mere unfolding of hereditary potential.

One pioneer study on the changing I.Q. concerned identical twins reared apart. Since identical twins have the same hereditary potential, then any differences in ultimate ability may be presumed to be due to environmental differences. In the study of nineteen pairs of twins, it was found that in about half the pairs there was little difference in I.Q. after a period of years (one pair separated at the age of three was tested at the age of fifty-nine). This was not surprising, since the quality of their environments was deemed by the five judges to be quite similar. In eight cases the I.Q. varied by 10 to 24 points. In five of these cases—those who showed the greatest difference in I.Q.—there was a difference in schooling of four to fourteen years. The estimated educational advantage of the environment was rated much higher for the twin with the higher I.Q., and the social advantages were superior, though not consistently so (there were a few cases in which the social rating was higher with no superiority in I.Q.). The greatest difference was 24 I.Q. points. The twin with the superior rating had been graduated from college and had become a teacher. Her twin had only two years of regular school. In the five cases in which differences in schooling were four to fourteen years the I.Q. differences were 7, 12, 17, 19, and 24 points (205).

I.Q. changes in children attending preschool were studied at the University of Iowa Child Welfare Research Station. In one study it was found that, on the average, children attending the preschool made gains in accordance with length of time and regularity of attendance. Gains up to 40 I.Q. points were recorded in some instances. Children who attended preschool for three years made an average gain of 10.5 points. Children who originally tested average made greater gains than those who originally tested superior—a gain of 18.9 for average children attending over three years and a gain for superior children of 11.5 points (282. pp. 377*f*.).

This and other Iowa studies have been critically examined by various authorities, and doubts have been raised whether or not the results are genuinely encouraging (179 and 244). There are questions about the statistical treatment of data, possible bias of examiners who may be hoping for favorable results, the effects of practice on the pupils who take the tests, and the shortcomings in the tests themselves. A few of the ques-

tions have been answered, some of the data reanalyzed, and the conclusions reaffirmed (283). While the studies have not been disproved, it is probably well not to become too enthusiastic about the results. For instance, popular articles have been written on mental deficiency which raise hopes that result in cruel disappointment for parents of retarded children. There are children whose potential is such that any additional stimulation beyond what they receive in a relatively easy environment will produce only frustration. Environment is only one factor in intellectual development; one study has assessed environment as comprising only 25 per cent of the total determining factors of intelligence (41). Hence, until further data disprove it, a good working hypothesis is that appropriately stimulating environments may in some cases have the effect of raising the *measured* intelligence of children but that generally it will vary but little (36).

Two important factors in the changing I.Q. have been noted. One is that there must be a *marked* change in environment; and the other is that greater I.Q. change takes place if the extra stimulation occurs at an early age. It is not particularly remarkable that psychologists should adhere to the belief that the I.Q. is constant (though fluctuations have always been recognized). If the child has an intellectually stimulating home when he is ten years old it is quite likely that he had similar stimulation at the age of one or two. Moreover, relatively few children are provided with the stimulating environments which constitute the usual experimental situation. But it now seems to the author that sufficient evi-

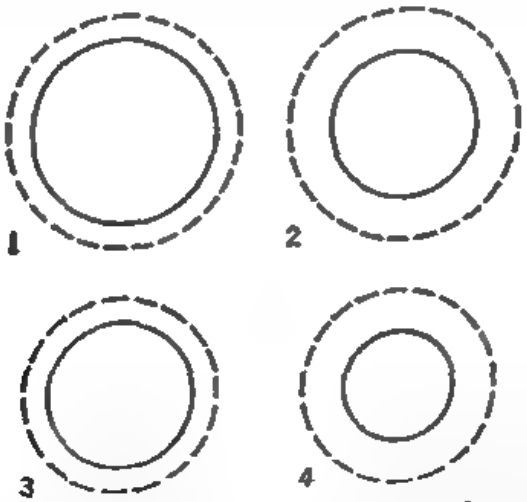

FIG. 14. Effect of environment in stimulating intellectual growth. Let the outer (broken) circle represent a hypothetical hereditary limit. The smooth inner circle represents tested, or measured, intelligence. Individual 1 is a person whose test scores come close to realizing his potential. Individual 2 has greater potential than individual 3, but both have the same "test" intelligence. Individual 4 has suffered the double handicap of limited potential and poor environment.

dence has been accumulated to admit the working of the principle of growth. A healthful environment must be given credit for developing the individual's potential to the fullest extent possible. The reciprocal roles of heredity and environment in the development of intelligence are schematically illustrated in Fig. 14. Certainly, a big problem for educators is to decide whether operative, or functional, intelligence *as stimulated by the environment* is measured or whether tests measure inherited potential.

CORRELATES OF INTELLIGENCE

Age. The ability to adjust to one's environment increases as the individual grows older. Infants have less capacity for adjustment than do six-year-olds, and six-year-olds have less adjustive ability than do normal twenty-year-olds. The relationship of age to intelligence may occasionally present a problem for teachers. The youngster with the highest I.Q. in the class may not always be the most intelligent. A child who is two years older chronologically than a child whose I.Q. is five or six points higher might actually be more intelligent in terms of adjustive ability (mental age). Teachers must be careful to note the age of children with respect to their intellectual development, particularly in the primary grades. A difference of a few months in chronological age or mental age will be much less discernible in the secondary school. For example, a parent asked a first-grade teacher how her young son was getting along in school. The teacher said, "Just fine," and mentioned some of the good habits and attitudes he had developed, but she placed little stress on his reading progress. However, his reading was what concerned the mother. "He did not get as good a grade as his brother did in the first grade." The teacher knew the answer: "But there's a year's difference in their ages. Your older boy was born in January and could not enter school until he was almost seven. Your younger boy was born in December and entered school before his sixth birthday."

Theoretically it appears that intellectual growth ceases at the age of twenty or twenty-five years. Growth is more rapid and continues for a longer time for more intelligent persons, while the person of less intelligence grows more slowly and ceases to grow at an earlier age. However, the important consideration again is the definition of intelligence. Is intelligence largely a matter of learning ability as such or of learning ability with respect to *new* things? It is conceivable that a person of eighteen may be better able to learn something that is *entirely new* because of greater mental retentivity and adaptability. But the more experienced the individual the rarer are his chances of encountering something entirely new. Past experience in seeing relationships, discovering meanings, and perceiving implications is a factor in learning that is no less important

than mental retentivity and adaptability. The fifteen-year-old has a limited background of experience to which to attach new meanings. The twenty-five-year-old with approximately the same I.Q. has almost half again as much experience. Thus, just as the child of two will learn less than a child of six with the same I.Q., the person of thirty or forty years will learn more readily than the fifteen-year-old. The older person, despite somewhat lessened powers in terms of mental adaptability, can still learn. The factors of motivation and time must also be considered. The child of school age is urged by teachers and parents to use his learning powers. A great deal of his time is devoted exclusively and intensively to learning. The older person has less time to give to learning because of family and occupational demands. These statements are illustrated by the experience of GIs in college. It has been noted in many studies that the GIs, who were older and more experienced than the non-GI students, made better records than had been predicted in comparison with the scholarship of students of equivalent intelligence ratings (259). The basis for those predictions was taken from data for a college generation which, on the average, was from four to six years younger.

Oscar Kaplan has reviewed and evaluated the research on later adult learning, and his conclusions support the foregoing observations. He has found that there is a loss in speed of reaction but an increase in dependability of judgment. There is a loss in sensory acuity but an increased proficiency in tasks demanding accuracy. Older professors are not uniformly inferior to younger professors in learning. Older persons often test lower on certain subtests of intelligence tests but test higher in vocabulary, opposites, and disarranged sentences. All this, he points out, indicates that intelligence tests are "instruments for the assessment of ability rather than capacities." When a mental function is used it does not atrophy (147). There is a strong temptation to say that, to some degree, intelligence is a matter of habit. Age is not merely a state of mind. It is a condition to which one must adjust. But the fact remains that older people can learn. Often they are superior to younger persons because of their habits and background. One cannot safely make inclusive generalizations about the relationship of age to intelligence.

The implications of this discussion are perhaps more significant from a personal viewpoint than from a professional viewpoint. It is probably never too late, in the great majority of cases, to learn effectively. The factor of experience should not be forgotten in studying the curve of mental growth. One should not be discouraged because the level of the curve is lower at thirty or forty years than it is at twenty to twenty-five years. Motivation, clearly defined purposes, confidence, and experience are quite as important to the older person as they are to pupils.

Heredity. The parents of gifted children are generally superior in intelligence. The parents of slow learners are generally below average in intelligence. One study shows that almost one-third (31.4 per cent) of a group of gifted children came from families of professional people despite the fact that the professional group constituted only 2.9 per cent of the population studied (260, p. 64). Another study found that 48 per cent of a group of eminent men were the sons of eminent fathers (50, p. 28). The chances of a person's having a father who is listed in

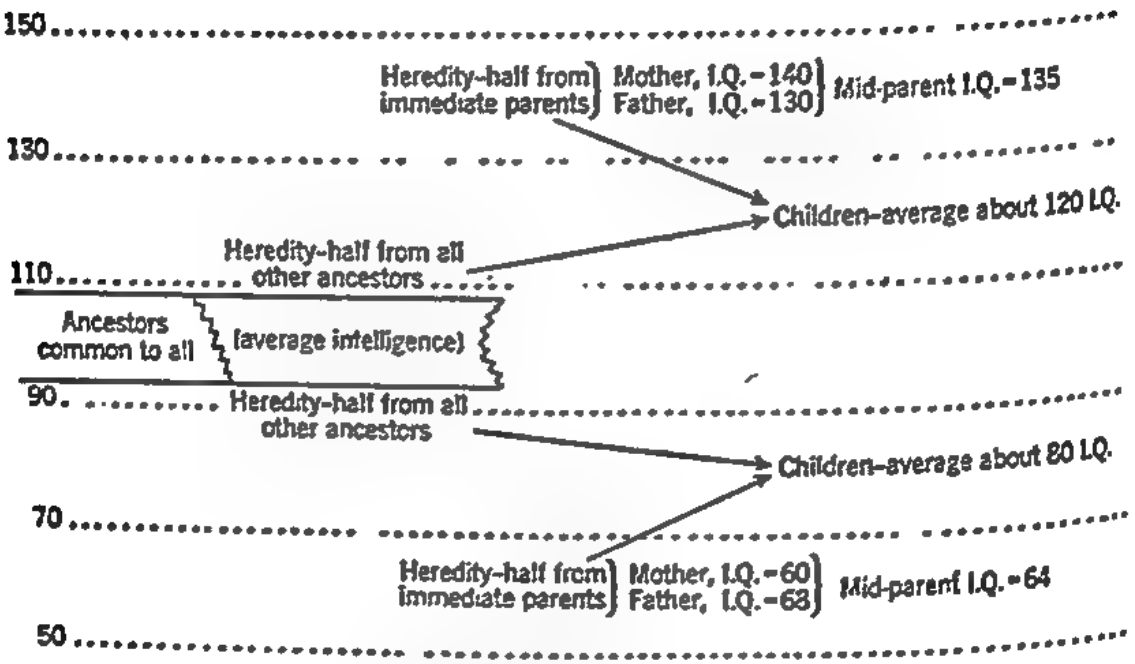

FIG. 15. Schematic representation of intellectual inheritance (potential).

Who's Who is about one in 2,000, yet of 578 children who were tested and found gifted, three had fathers who were so listed. Other studies give similar indications that mental and personality defects, as well as giftedness, tend to run in families (224).

The principle of heredity is further complicated by Galton's principle of heredity regression, that is, a given child theoretically receives only one-half of his heredity from his immediate parents, one-fourth from his grandparents, one-eighth from his great-grandparents, etc. Sooner or later the ancestry of gifted children and those less richly endowed in intelligence becomes common stock. The principle of hereditary regression suggests to teachers that they cannot be sure that children of intelligent parents will be similarly intelligent—or that dull parents will have children who are equally dull. In fact, the chances are against that occurrence. Children tend to regress toward the average (see Fig. 15). Children whose parents have a mid-parent I.Q. of 135 will *tend* to have a somewhat lower I.Q.—between 100 and 135. Children whose parents

have a mid-parent I.Q. of 64 will tend to have a somewhat higher I.Q.—between 64 and 100. However, in terms of probability, there is a greater chance for the more gifted parents to have a child with an I.Q. of 150 than for parents with a mid-parent I.Q. of 64 to have such a child.

Environment. The role of environment in development has already been discussed. Investigations of the changing I.Q. show that individuals evidently develop only that portion of their potential that is required by their environments. Many children living in areas of low cultural status are average in intelligence at the younger ages (indicating average potential), but as they grow older they have lower I.Q.s in proportion to their ages. H. Gordon, studying canal-boat children in England, found that younger children had higher I.Q.s than older youngsters; children under six years of age averaged about 90 I.Q., while their older brothers and sisters averaged about 70 I.Q. (109).

A similar interpretation can be made of studies on the effect of preschool attendance on test intelligence. It has been noted that children who score high on initial tests improve less on subsequent tests than do those who score lower on initial tests. This suggests that the brighter children have been stimulated to achieve more of their potential, while the slower children have achieved less of their potential and thus respond to what for them are markedly more stimulating environments. Children from orphanages sometimes improve their test ratings after being placed in good foster homes. In fact, the I.Q. of such a child often resembles the mid-parent I.Q. of the foster parents more closely than it does the mid-parent I.Q. of his true parents (245).

Such studies as these indicate that the school may stimulate the pupil's intellectual growth so that he approaches his maximum potential. This was found in the Locust Point study, although the results were not expressed in terms of I.Q.

Another study, of isolated mountain children, led to the same conclusion: One's environment stimulates or fails to stimulate the development of hereditary potential. In this study, intelligence tests were given to children from four communities—one more isolated than the others but each more isolated than the community which was used as a control. Communities were selected in which the family stock was much the same—English and Scotch-Irish. Although the I.Q.s of six- to eight-year-old children were much the same in the different areas, the greater the isolation the lower the tested I.Q.s at ages above eight. The lower I.Q. of the older children were also related to the amount of schooling. The children of the community which had sixty-six months of school in the twelve preceding years had higher I.Q.s than the children of the community which had thirty months of school in the same period. It was concluded that children develop only as the environment demands. The

isolated environment was enough to stimulate a child up to four or five years, but as he grew older more stimulation was required to encourage continued growth of intelligence (242). Many questions can be asked about the study: Did brighter people leave the community? Were the same children used on repeated tests? Are standard intelligence tests fair to mountain children? These are questions worth contemplation. But whatever the answers, we cannot afford to take chances with children by deliberately withholding from them the best cultural environment possible.

Broad factors in the environment that are conducive to intellectual growth cannot be sharply differentiated from those factors that foster physical and emotional health. Good medical care and proper diet play an important part in providing the child with good health, without which his ability to learn is hampered. Child specialists affirm that loving care is essential to the growing individual. Parents and teachers who are genuinely interested in children are generous with love and affection. Moreover, the earlier such beneficent influences are provided the more effective they are in fostering optimum mental growth.

Sex. A great deal of research has been done on the relation of sex to intelligence. The results do not confirm the contentions that boys are superior to girls or vice versa. Rather, they indicate that there are different kinds of intelligence. Males on the average demonstrate *slight* superiority over females in the ability to reason and to detect similarities and in certain aspects of general information. Females on the average demonstrate *slight* superiority in memory, language usage, and esthetic comparisons. It is commonly observed that girls develop facility in language usage at an earlier age. Boys show greater variability than do girls in the range of intelligence; that is, more boys than girls are defective in intelligence, but also more boys than girls are markedly superior.

Any differences in intelligence between boys and girls are so slight as to have no significance for educational procedures. Moreover, apparent differences may be due as much to cultural differences—the role assigned to the sexes by society—as they are to innate factors. The significant conclusion to be drawn is that differences between the sexes are smaller and much less significant than the differences within the sex. There must be no differentiation in treatment of boys and girls based on an assumption that one sex is brighter than the other.

Race. Widespread notions about differences in intelligence between races are also based on tenuous assumptions. Research studies reach the same conclusion—that differences between the races in matters of intelligence are much less significant than the differences within the race. A most cogent statement in this whole matter is that formulated by Paul A.

Witty: "Let us therefore abandon a superstitious anachronism which leads us to stigmatize various racial groups and to condemn them to meagre educational experience and opportunity." [a]

It is true that many studies show that when a group of Negroes, Indians, or Mexicans are given an intelligence test the average score may be somewhat lower (5 to 10 I.Q. points) than the average of a group of white children. Such data, acquired in the earlier days of mental testing, have been taken at face value. It is now the consensus of psychologists that test data must be interpreted. It appears that differences are negligible if all the groups being studied have the same cultural and educational environment. Therefore, teachers must be just as aware of the potentialities that reside within individual members of a minority group as they are of children of majority groups.

Emotional Factors. The dean of a certain school of education told of an experience he had had with aptitude tests. A man who wanted to study for his doctor's degree took the prescribed qualifications tests. His score on the mental-ability test disqualified him. He went to another school with an equally good academic program but where different criteria of admission were used. The student obtained his degree with honors and later became one of the outstanding men in his field. The dean of the school which had disqualified him said, "I am sure that the test gave a good indication of his ability but there is one thing it did not show—his determination and drive to use what he had to good effect." This assertion indicates that "test intelligence" and the ability to use what one has are not perfectly and positively correlated.

It is common for teachers to become well acquainted with a given pupil, judge him to be average, superior, or dull on the basis of his work, and then discover that the recorded intelligence score of the pupil is at wide variance with their otherwise *justified* judgment. They note frequently that the child with an I.Q. of 100 is accomplishing just as much as is the one with an I.Q. of 120, despite the fact that the latter is living up to reasonable expectations.

These statements are not based on chance observations—though such evidence is not necessarily without weight. Experimental studies show that when babies in orphanages are cuddled, talked to, and cared for individually they respond by being more active and alert, talk more—or try to talk more—and play more constructively. Some of the gains made in intelligence-test rating by children attending preschool are attributed to the fact that the child has become better adjusted to his new situation and has established rapport with the examiner (206, p. 97).

[a] Paul A. Witty in Charles E. Skinner (ed.), *Educational Psychology*, New York: Prentice-Hall, Inc., 1936, p. 463. Used by permission.

If intelligence is considered to be inherent in the composition of the nervous structure, it may be doubted that emotional factors influence intelligence. However, if we accept the view that intelligence is the ability to adjust to one's environment, then there can be little doubt that emotional factors do have an influence. It is for this reason that intelligence tests are not administered during the opening days of school, but only after the child has become somewhat adjusted to the situation in which he finds himself.

For teachers, the importance of the reciprocal role of intelligence and emotion lies mainly in helping the pupil make effective use of what he has. Fear generated in the classroom by threatening punishment and failure must be avoided. Interpersonal dislike and even hatred among students must be avoided by shunning autocratic and highly competitive situations. Anger and frustration should be reduced by seeing to it that the tasks assigned are appropriate to each child's ability. Constructive emotions must be employed by seeing that each pupil gets some satisfaction from achievement. Cooperative activities should be encouraged so that friendliness and sympathy will be generated. Pupils should see clearly the goals toward which they are working and should be helped to realize that the goals have personal pertinence. Democratic methods should be employed so that each child has a feeling of personal worth. Provisions for individual differences are inherent in all these suggestions. Differentiated assignments enhance feelings of security, provide the thrill of accomplishment, and make the pupil feel that both his limitations and his abilities are recognized by others.

Health and Physique. Studies have previously been cited which show that gifted children are, on the average, taller, heavier, and healthier and have fewer sensory defects than those with less intelligence. Obviously, when one is in good health he has a greater drive to participate vigorously in difficult situations. Perhaps teachers can do little about the child's health, but that little may be the weight that tips the balance in favor of a higher operative intelligence.

There is some evidence that diet plays a part in the growth and development of intelligence. In one instance, forty-one children who were diagnosed as malnourished were matched with a group of control children and were fed a more nutritional diet for a year and a half to two years. The experimental children averaged a gain of 10 I.Q. points, with the greatest gains accruing to the children below four years of age. The control children did not gain (214). Gains ranging from slight to marked have been noted after providing additional amounts of thiamine in children's diet. Even if the early gain is only slight, it is felt that the cumulative gains over a period of years may mean the difference between superiority and mediocrity (116). Numerous studies attest to the value

of adequate amounts of milk in increasing children's height and weight, but a study in Scotland indicated that giving children milk in addition to the usual allowances had the effect not only of improving general health but also of increasing mental alertness (169).

Of course, not all the teacher's problems will be solved by enriched diets. But increased learning ability comes from many small improvements.

The responsibility of the school for the pupil's diet has been only sporadically recognized. There is a more widespread recognition of responsibility when it comes to the matter of sensory acuity. When a child is cut off from intimate contact with his environment by varying degrees of visual or auditory handicap, his intellectual development is handicapped. Defective vision or hearing is an insufficient basis upon which to judge that a given child will have less than average intelligence. But when hundreds of children with such defects are considered, a tendency is noted for those with sensory defects to have slightly lower than average intelligence in proportion to the seriousness of the defect. A child who does not see and hear clearly has a poorer operational environment than the child who has normal sensory acuity.

There is, of course, the possibility that the hearing defect or visual handicap cannot be corrected. In such cases it is desirable that the regular program of work be adapted to the child. Recognition of the importance of such procedures is growing, but at the present time it is estimated that only about 10 per cent of the pupils in need of special work programs are receiving them.[4]

One implication of the foregoing data is that teachers should be aware of the importance of health factors and sensory defects if they are to help each child achieve his optimum development. They should also pay attention to the results of periodic physical examinations. They should be alert to the symptoms of fatigue and sensory handicaps. Restlessness, drowsiness, inattentiveness, frequent illnesses, unexplained nosebleed, decreasing accomplishment in school, pallor, and pains in muscles and joints should serve as signals to the teacher that the child needs medical help.

Since it is estimated that hearing defects may occur in as many as 11 per cent of all school children, it is important that teachers know some of the symptoms of hearing difficulty. When a child is suspected of having such difficulty he should be given an audiometric examination and/or referred to an otologist. Some of these symptoms are (74):

1. Inability to locate the direction from which sounds come
2. More than normal use of hands in making wants known

[4] It is recommended that teachers become acquainted with this area by taking courses in the education of exceptional children or by reading books on the subject.

3. A voice which lacks an intonation pattern and resonance
4. Faulty equilibrium
5. Faulty articulation and mispronounciation of common words
6. Inattention and frequent mistakes in carrying out directions
7. Turning the head to catch the sound with the better ear
8. Request for repetition of words
9. Unusual mistakes in taking dictation
10. Visible moisture or discharge from the ear
11. Frequent earaches
12. Complaints of noises in the head

Estimates of the amount of visual difficulty which prevails among school children run almost to 20 per cent. Hence, it is significant that teachers be aware of symptoms which may indicate the need for professional visual examinations. Some of these symptoms are (104, p. 290):

1. Excessive blinking when reading or regarding small objects
2. Excessive nervousness and frequent fits of temper
3. Attempts to brush away nonexistent impediments
4. Book held in abnormal position—too close or too far away
5. Head tilted to one side when reading. Shifts angle of perception
6. Restlessness and nervousness after reading or viewing a movie
7. Inattentiveness during wall-chart or map work
8. Irritated eyes (eyes become watery or the pupil cries after reading)
9. Inattentiveness after a short period of reading
10. Face distorted when reading or looking at distant objects
11. One eye shut when reading. Letters confused and random guesses at words

ADAPTATIONS TO INTELLECTUAL DIFFERENCES

The student of educational psychology may be able to recite the proven facts about differences in intelligence: How many pupils cluster about the average, what the range of differences is, and how many pupils are at the extremes of the distribution. The books tell us that intelligence is a matter of degree. The difference between a pupil with an I.Q. of 130 and a pupil with one of 70 is a matter of degree. But all this information remains theoretical until the beginning teacher sees these differences in the classroom and begins to appreciate their significance.

The differences between Johnny with his I.Q. of 130 and Tommy with his I.Q. of 70 seem to be much more than a matter of degree. Johnny quickly covers the material that was assigned and asks penetrating questions about what he has read. These questions suggest to the teacher extra reading and research that will be of interest to him. Johnny shortly comes back with suggestions of his own for additional research, which the teacher readily endorses. The teacher's job here is to provide en-

couragement and keep out of the pupil's way. Tommy, on the other hand, after repeated explanations, varied approaches, and concrete explanations comes up with absurd answers. Tommy was a very nice boy, but he just did not seem to understand geometry. Explanation, drill, and demonstration seemed to have no effect. Finally, while studying parallel chords intersecting a circle, Tommy was asked why angle *A* was equal to angle *B*. He replied, "The square on the hypotenuse of a right-angle triangle is equal to the sum of the squares on the other two sides." This was the payoff. He was told to "study" *National Geographic*, for which he would receive a passing grade. This, of course, is not a solution; it is a bypassing of the problem.

Your study of intelligence will have little meaning unless it suggests techniques for dealing with the differences that you will inevitably encounter in your teaching career. We can admit that the aims of education are the same for every individual: health, command of the fundamental processes of living, worthy home membership, vocational efficiency, civic participation, use of leisure time, character, and so on. But the approach to these aims must of necessity be varied.

Suggestions for Dealing with Slow Learners. The following observations will serve to show how knowledge of the psychology of individual differences and of the nature of intelligence may be applied to the classroom situation. They will also serve to illustrate the futility of directing teaching at a hypothetical average pupil.

1. The slow learner will be more strongly motivated by praise than by criticism.

2. Examples, experiences, demonstrations, and illustrations serve to make learnings concrete.

3. Repetition of facts in different contexts and drill on fundamentals (such as numbers and English usage) will be helpful.

4. Emphasis should be placed on the development of traits of punctuality, neatness, health, etc., with specific suggestions for practical applications.

5. Slow developmental rates require patience.

6. Specific direction and prescription are desirable and gratifying.

7. Reading and number work should emphasize everyday situations, such as reading signs and directions, making change. Illustrations should be simple and specific.

8. Abilities in various areas—music, manual arts, arithmetic, reading—will vary widely, and an attempt must be made to capitalize on pupils' strengths.

9. Promotion must of necessity be largely dependent on social and chronological age. Grading must be based on personality growth rather than on academic achievement.

10. Immediate rewards, short-term goals, praise, and encouragement are effective motivators. The slow learner appreciates being told what to do.

11. Schoolwork should be closely related to the simple occupations the slow learner will probably have as an adult.

Suggestions for Dealing with Gifted Children. A basic problem of educational psychology must always be that of recognizing and making adaptations for individual differences. There are, nevertheless, some generalizations about groups of individuals that will be pertinent. The following points should be considered as being indicative rather than uniformly applicable to all superior children.

1. Blame and censure will be more effective with the gifted child than with the slow learner—though this should not be interpreted as a blanket recommendation.

2. Verbal descriptions and generalizations can serve to abbreviate and consolidate learnings.

3. Repetition is boring. Study beyond that required of the average or slow learner is stimulating and gratifying to the gifted child.

4. Character traits are important but will be developed through challenge, meaning, and elaboration of school tasks.

5. An abundant supply of books, laboratory equipment, and illustrative material must be provided. From these the bright child may select and utilize such materials as are in accord with his personal aims.

6. Reading should expand, clarify, and enrich daily experiences. Numbers can be used as tools for thinking and for consolidating generalizations.

7. Abilities are more evenly distributed among gifted children than among slow learners. For gifted children emphasis should be placed on well-rounded development and the expansion of interests rather than on existing interests to the exclusion of diversification.

8. Acceleration (skipping of grades) is recommended up to two years, *provided* the child fits the social and interest level of the other students in the grade to which he is promoted. Grading can be rigidly based on academic performance and on expectation.

9. Typically, the gifted child has much drive and originality. Permissiveness and challenge are more effective than prescription of work.

10. Schoolwork can profitably be of traditional academic nature, designed to give a liberal background for later professional preparation.

SUMMARY

Psychological Principle	*Practical Application*
Intelligence constitutes man's greatest resource for adjustment.	Fostering intellectual growth is a prime responsibility of the school.

Intelligence may be thought of as the ability to make facile adjustments.

Intelligence tests do not measure innate intelligence—they *do indicate* operational intelligence.

Although the I.Q. may remain constant, intelligence develops with age.

The age at which intellectual growth ceases is open to interpretation.

Poor environments result in retarded mental development.

Differences in intelligence between the sexes are slight and seem to be a function of culture.

Intelligence differs less between races than does intelligence of *individuals within a race.*

Pleasant emotions stimulate the maximum use of intelligence.

Intelligence is positively correlated with size and health.

Sensory defects keep pupils from intimate contact with their environment.

For slow learners, the method and curriculum should be adapted to suit their needs.

Bright children require less constant supervision, greater freedom.

Schools can foster adjustment by teaching facts and their usage.

An I.Q. score should be regarded by teachers as indicative of developmental *rate—not of potential.*

An I.Q. is of less value than M.A. in predicting success in reading, algebra, etc.

Teachers may safely assume that the ability to adjust may grow throughout a lifetime.

Environments must be developed which are *individually* appropriate.

Teachers must avoid inferring differences on the basis of sex.

It is unrealistic and undemocratic to differentiate instruction or opportunity *on the basis of race.*

Motivation—success, feelings of worth and security, etc.—deserves attention.

*Teachers must avoid inferring dull*ness from large size or brightness from small size.

Regular physical examinations are a vital function of the school. Teachers must be aware of typical symptoms of sensory defects.

Instruction should be concrete, specific, detailed, richly illustrated, and practical and should be based on *short-term goals.*

The teacher's job is to challenge, give general directions, and provide freedom for gifted children.

PROBLEMS AND EXERCISES

1. What are the practical implications of a definition of intelligence? What definition of intelligence seems most appropriate *for teachers?*

2. Cite evidence based on observation of your acquaintances that there are *different kinds of intelligence.*

3. Is it more important for the primary teacher or for the secondary school teacher to know the chronological age of his pupils? Give reasons for your answer.

4. Have you seen any evidence among people you have known that points to the effectiveness *of environment* in stimulating or inhibiting mental development?

5. Have some class member read and report on the article by Ruth E. Fairbank, "The Subnormal Child—Seventeen Years After," *Mental Hygiene,* Vol. 17 (April, 1933), pp. 177*ff.*

6. Has your school experience given you any reason to believe that some teachers think there is a difference between boys and girls in the rates of mental development?

7. Have you heard in recent conversations any evidence of a belief in innate racial differences in intelligence?

8. Discuss with some teacher you know the subject "emotional factors in intellectual development" and report your findings in class.

9. Would differentiated instruction for slow learners and for bright children be undemocratic?

10. What factors would you consider in judging whether or not a fifth-grade child who has not achieved grade standards should be promoted?

11. Would you give a bright child who was at the top of his class in arithmetic, but who had not applied himself diligently to his work, the top grade in the class? Explain your answer.

SUGGESTED ADDITIONAL READINGS

Garrison, Karl C., *The Psychology of Exceptional Children*, rev. ed., New York: The Ronald Press Company, 1950, pp. 117–200.

The chapters indicate the limitations that are placed on education by low intelligence but stress the hope that more can be done if there is better understanding and if appropriate school adjustments are made in method and curricula.

Intelligence: Its Nature and Nurture, Thirty-ninth Yearbook of the National Society for the Study of Education, Part II, distributed by University of Chicago Press, Chicago, 1940.

The chapters "Factors Influencing the Growth of Intelligence in Young Children," "Retest Changes in the IQ in Certain Superior Schools," and "Iowa Studies on the Effects of Schooling" are especially pertinent to the materials presented in this chapter.

Olson, Willard C., *Child Development*, Boston: D. C. Heath and Company, 1949, pp. 92–117.

Factors such as heredity, environment, and health are discussed in relation to intellectual development. An important section is that which relates vocabulary and language to mental growth.

Witty, Paul A. (ed.), *The Gifted Child* (The American Association for Gifted Children), Boston: D. C. Heath and Company, 1951, pp. 187–234.

These two chapters deal with the nature of provisions for gifted children and evaluate their relative worth. A detailed analysis is made of a high school of science that devoted particular attention to the development of the potentialities which gifted children possess.

AUDIO-VISUAL MATERIAL

Attitudes and Health, Coronet Films, Inc., 65 East South Water, Chicago 1. (10 min, BW or C, sd.)

A discussion of psychosomatic illness leads Marvin Baker to think of his own mental health. Disappointment over failure to make the basketball team and subsequent poor schoolwork lead him to rethink his attitudes.

Counseling–Its Tools and Techniques, Carl F. Mahnke Productions, 215 East Third St., Des Moines 9, Iowa. (20 min, BW, sd.)

Shows guidance at work in the secondary school. Deals with such things as the counselor's preparation, establishing rapport, studying problems, and planning a course of action with the individual.

Guidance Problem for School and Home, Teachers College, Columbia University, New York 27. (18 min, BW, sd.)

Danny's social adjustment and schoolwork are poor. He has ability but lacks interest. His teacher discusses the problem with Danny's mother, and the principal and others work with Danny for improved adjustment.

12

THE NATURE AND MEASUREMENT OF INDIVIDUAL DIFFERENCES

THE STUDENT of educational psychology will soon be faced by a class of students. Whether that class is composed of first-graders, fifth-graders, or high school seniors, the members will by no means be alike. If there are thirty pupils in the class, there are many more than thirty problems to solve if the teacher wishes to be effective. His words of advice will be attentively listened to by some; others may not even know he is speaking. Some will quickly and eagerly do the tasks he assigns, others will do them steadily but slowly, while still others will fail to do them at all. Classification of these pupils into interest groups or ability groups will reduce the range of differences and make teaching somewhat easier. But, it is safe to predict that your success in teaching will in large measure depend upon your understanding of these differences and upon your ability to capitalize upon them.

SOME BASIC CONSIDERATIONS

The Normal Curve of Distribution. An understanding of the extent of pupil differences can be approached by examining what is known as the "normal curve of distribution." This curve is a graphical representation of the degree of similarity and the range of differences that are found when a large group of individuals is measured for any one trait, such as height, weight, intelligence, knowledge, interest, or friendliness. Figure 16 shows seven different measurements. Item 1, intelligence, shows that the I.Q. of the great majority of children ranges between 90 and 110. The flatter curve shows a greater over-all range in I.Q., from 60 to 140, with fewer falling between the points of major cluster (90 to 110). Items 2, 3, and 4 show the range and cluster of specific traits of personality. Data for such evaluations may come from a combination of pupil-pupil ratings, teacher judgments, and personality inventories. Item 5 is indicative of differences in knowledge that will characterize any group. In a typical fifth grade, reading ability will cluster about fifth-grade level,

some pupils will read only at the second-grade level, and a few will easily read materials of interest to them ordinarily considered to be high school level. Similar differences would be found in language usage, vocabulary, arithmetic, social studies, or spelling. Even if the group were a so-called "homogeneous group" (*e.g.*, one selected on the basis of high I.Q. for a given grade level) there would still be marked differences, though the range might be less and the point of major cluster would be higher. Items

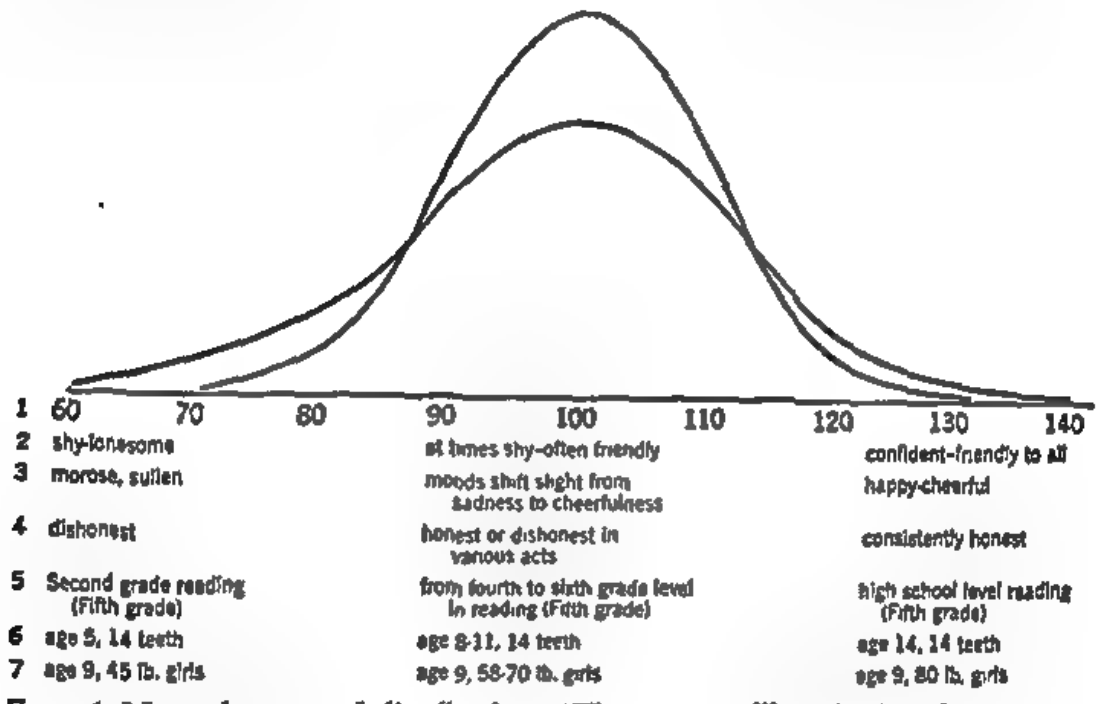

FIG. 16. Normal curve of distribution. (The curve will be higher for groups in which some selection has been made—flatter when individuals in the group are unselected.)

6 and 7 show differences in ages among children with fourteen teeth and the weight of several girls at age nine. Each of the seven items should be considered as unrelated to the rest.

It is highly likely that some of the individuals in your educational psychology class have as much knowledge about the subject at the beginning of the term as others will have at the end of the term. This will occur in spite of the fact that there has been a process of selection going on since the beginning of your school careers. All this indicates the futility of attempting to teach all pupils as though they were "average." Even in the matter of reading, where well over one-half of the fifth-grade class (see Fig. 16) reads at just about fifth-grade level, another curve would show a wide range in the type of reading material of interest to various members of the class. The most important practical prob-

lems that you will meet in the classroom—discipline and motivation—hinge upon a functional knowledge of individual differences.

The Fallacy of Distinct Types. There are fat people and there are thin ones. There are those at the top or bottom of a group with respect to a particular characteristic. Some people are introverts more of the time than they are extroverts; some people are bright in most things and others are rather consistently dull. But the notion that these extremes of distribution constitute sharply demarcated types has been repeatedly denied by scientific investigation. There are not just two types of students in an educational psychology class or just three types of pupils in a fifth-grade class. Yet "fifth-graders," "good readers," "cooperative pupils," or "ten-year-olds" are terms which are used as though they were clearly defined types. In a recently published book one learns that seven-year-olds are sensitive to the feelings of those about them and desire approval. The interests of boys and girls are growing apart. They are full of energy but tire easily, they think in concrete terms; they are highly competitive; and they enjoy songs, nature stories, and movies. They are beginning to understand time and money. Such information about seven-year-olds may be helpful to teachers *if*, in addition, it is understood that many of these things can be safely said of five-year-olds. *Some* of these characteristics will not appear until age nine in *some* individuals. In short, the defining of characteristics must not blind teachers and parents to the fact of individual differences. Types do exist, but only as *hypothetical* averages (fifth-graders) or as *extremes* of a distribution (fat and lean).

> This proclivity of man to classify anything and everything on the basis of hard and fast lines of demarcation has met with considerable objection from both statistical and psychological angles. While it is a well-known truism that men differ among themselves in a great many respects, it is obvious upon critical reflection that unless we insist upon comparing the relatively few extreme cases usually available, they do not necessarily differ in the clear-cut type sense.[1]

Knowing the general characteristics of a group, the typical interests of pupils of a given age, or the potentialities of children with known mental ages can help the teacher in directing instruction to the approximate center of the group (100). But a great deal of instructional effort will be futile—information will fall on deaf ears—unless the teacher appreciates the fact that there are pupils at the extreme ends of the curve. It must also be realized that those in the center of the curve on one measurement may be at the extreme ends by another kind of measurement. It has been found, for instance, that pupils from the lower class

[1] Louis P. Thorpe, *Psychological Foundations of Personality*, New York: McGraw-Hill Book Company, Inc., 1938, p. 314.

of society who are high on the intelligence curve do not rank as comparatively high in achievement as do middle-class pupils. Middle-class respect for education is not shared by those of the lower social class (125). Yet ordinarily teachers tend to treat pupils with similar intelligence as if they had similar motivations.

The Value of Differences. While individual differences are a great problem to teachers, they are of immeasurable value to society. In primitive groups, when each family group produced its own food, made its own shelter, and constructed its own clothes, it was probably advantageous for everyone to possess much the same kind of skill and knowledge. But in a complex and highly integrated society such as we live in today, specialization and uniqueness form the very basis of continued existence. One man makes his contribution to the welfare of society as a whole by becoming a scientist (and in a specialized area). Another makes his contribution by becoming a philosopher. Another becomes a teacher, another a homemaker, and still another a distributor of goods. Each must have special understanding, orientation, and knowledge.

Individual differences are of value to the individual. While one may not have great finger dexterity, he may be an effective teacher. Another may be gifted in working with the abstractions of mathematics and may help others through his manipulation of figures, at the same time gaining satisfaction for himself through recognition and achievement. This, of course, does not mean that one will always be able to do the things he would most like to do, nor does it mean that pupils in school should do only those things that they like to do. The fact is that in the world of work, the individual will frequently have to do the kind of work that *has to be done*. However, there will be a fortunate few who can make their choices on the basis of interest and aptitude (66, p. 275). Individuality provides the basis for greater freedom in personal development.

If the values of individual differences are to be capitalized upon the school must recognize its obligation in developing them. These values give meaning to the statement so often made in books in method and psychology: "We must take children where we *find them*." The orientation point in democratic education should be the uniqueness of each child—not the notion that all children should conform to arbitrary standards of accomplishment and conduct. Mass education has its merits in disseminating basic knowledge; but individual education holds forth the promise of improved society and personal realization. Fortunately, we know something about what should be done in regard to individual differences—many schools are doing excellent jobs in this respect. It is recognized, for instance, that since the high schools are enrolling an unselected group of pupils procedures will have to be varied. The methods of instruction used at the secondary level can profitably be more like

those used in the primary school (122). It has been suggested that college instructors might profitably employ some of the techniques of "progressive education" (218). It is up to the teacher to put more theoretical knowledge into practice in his classroom.

MEASUREMENT OF INDIVIDUAL DIFFERENCES

Limits of Measurement. Human traits are so complex, so interrelated, that precise measurement is difficult—if not impossible—for most of them. Devices are available to measure height, weight, blood pressure, white corpuscles, albumin, bone ossification, and the like. But no tools are available to measure intelligence, drive, honesty, social adjustment, etc. However, we can and do get valuable *approximations* of these traits or qualities, and we can make evaluations on the basis of test data. Yet it is important that classroom teachers know that mathematically precise data are not presently available in the realm of psychological tests (183, p. 103). This should lead them to an evaluation, or interpretation, of the results of an intelligence test, a personality inventory, or a rating scale. It may be that someday it will be possible to measure intelligence by means of brain waves, motivation through an analysis of blood chemistry, or honesty through a psychogalvanometer. But the hope is a weak one because of the changing and unpredictable psychological environment and the growing individual.

It might be helpful to remember that a test is a sample—a sample of blood, a sample of behavior, or a sample of a total situation. Several samples enable the investigator to make a more accurate guess about the total than if he had to operate completely in the dark. For example, a diamond drill is bored into a mountain from different positions and at different angles. This enables the engineer to determine the length, breadth, and depth of an ore-bearing fault. The assayer then analyzes different sections of the core taken by the diamond drill and determines the richness of the ore in terms of the amount of worthless rock, copper, silver, and lead for each section of the core. But the final judgment about the amount and quality of the ore can only be determined by driving a tunnel, taking out the ore, and having it milled. Do the mineowners or stockholders get rich? It depends on the efficiency of the mining, the market value of the ore at the time it is shipped, the distance and availability of transportation, and the honesty of the bookkeeper. Tests (samples) have played a part in the solution of a problem. They have reduced the possibility of error, but they have not covered the entire situation.

A somewhat similar situation exists with regard to psychological testing. Samples of the manifestation of intelligence are taken by testing the individual's ability to handle numbers, to perceive symbols, to understand words, to solve problems. Informed guesses are made by psychome-

trists about the total area of intelligence and the varying proportions of special skills. Developing the individual (driving the tunnel) is the responsibility of teachers, who seek to perform their work with the least waste. Predictions can be made about the ultimate adjustment of the individual, but the environment (market conditions) that greets him at the time of graduation will influence the subsequent course of his life. Tests have played a part, but they provide only the basis for more accurate predictions. Tests provide clues for making more accurate estimations, but in the final analysis they must be *interpreted*.

Concepts Involved in Testing.

1. A test should be standardized. If a test is to be of maximum usefulness, it should be applicable to more than a group of limited size. Standardization involves several considerations. Children from one region or locality should not be favored or discriminated against. Standardization also involves set procedures for giving the examination. Careful and uniform wording of the directions and exact timing must be observed. Hence the test should be given to children in various regions to see whether there are differences that must be accounted for in the nature of the tests. The norms (averages, or standards) will often be stated in terms of pupils' ages, sexes, socioeconomic conditions, or grade achievements (262, p. 7). When the test has been administered experimentally to hundreds of subjects in various localities, a given score is often expressed in terms of I.Q., grade equivalents, or percentile ranks.

2. A test should be objective. The personal biases of the examiner should be reduced to a minimum. The feelings, hopes, likes, and dislikes of the person administering and scoring the test should be largely eliminated. Objectivity implies that a given answer is either right or wrong. There should be wide agreement on the correct answers and upon the meaning of those answers. Objectivity is easier to maintain in group testing than in individual testing. Hence, individual tests must be administered *only by specially trained technicians*. However, it should be stated that in the hands of a trained worker the individual test is superior because it does allow for the interpretation of intention, motivation, and application—which is not possible with group tests.

3. The test should be easy to administer. The teacher should be able to administer the test with the facilities that are ordinarily available in the classroom. The directions should be understandable and easily followed by the examinee. Inability to comprehend the directions may prevent a subject from doing a task which he has the ability to do. Ease of scoring and interpretation are other significant considerations.

4. A test should be valid. The items in the test should actually sample the items that the test is designed to measure. Thus, an achievement test that calls for a great deal of reading on the part of the examinee may

be invalid because the score depends more on reading ability than on the person's knowledge of the subject matter. The author once administered a standardized test in arithmetic in which the problems were carefully stated in such detail that much reading was involved. The test was invalid because poor readers could not read and attempt to work all the problems in the time allowed.

Another determiner of validity is agreement with other measures. This involves computing correlations (see Appendix) between test scores and other *quantitatively* expressed measures. Classroom grades may be correlated with intelligence tests to see that the measures of achievement accord with the measures of intellect. The judgments of experts, expressed on a numerical scale, may be used to compute the validity coefficient of intelligence tests. When teachers select tests they should see whether the publishers are proud enough of the statistical validity of their tests to publish the results.

5. A test should sample widely. This assertion has been anticipated by the foregoing remarks. No matter what the test is designed to measure, questions should be varied. In arithmetic tests, the problems should embrace all the processes. In reading tests, poetry, directions, stories, and technical passages should be included. In intelligence tests, numbers, vocabulary, problems, abstract materials, and memory should be included. One of the major objections to theme-type tests, which are often used in classrooms, is that the sampling is too limited. For instance, one pupil might know twenty incidents in American history but not know one of two that were called for on a two-question test, and another might know only the one incident out of a possible twenty but get as high a score as the pupil who knew much more. It is safe to say that the more widely the various items in a test explore knowledge and experience the better the basis for estimating the quality or area being evaluated.

6. A test should be reliable. The reliable test can be depended upon to yield like results under similar conditions. A test is reliable when the results of one administration agree with the results of another administration to a like group, or when two administrations of equivalent forms of the test give the same general results for the same person. Consistency, a synonym for reliability, is determined by experimentation.

It is extremely difficult to construct a reliable test. The consequence is that poorly constructed tests sometimes have "equivalent forms" that are actually of different degrees of difficulty. For example, two teachers were using form A and form B of a given reading test. Each gave one form of the test at the beginning of the term and the other form at the end of the year. The one who gave form B first found that her pupils made a very gratifying gain. The other, who used form A first, found that the class average was practically the same at the end of the year

as it was at the beginning. In fact, some pupils had apparently retrogressed in reading skill. Such an event would, of course, indicate that the test lacks reliability.

A test may be reliable without being valid. The arithmetic test referred to above, which contained much reading, gave consistent measurements. Successive administration of equivalent forms to the same individual yielded scores which were much alike. Yet it did not measure ability in arithmetic and therefore was not valid. On the other hand, if a test is to be valid it must also be reliable.

7. A test should be economical. Economy involves both time and money, and therefore simple equipment, carefully selected items that obtain wide sampling without an excessive number of items, and ease of scoring are essential to save time. On the other hand, an inexpensive test which can easily be administered may contribute so little to the teacher's understanding and guidance of pupils that any cost is excessive. Moreover, the tests must be valid and reliable or the cost tag will have little meaning. It is recommended that teachers seek the advice of experts, study published reviews of tests, and examine the test manuals when selecting tests. The seven items listed above might well be the criteria for choosing tests.

The Measurement of Intelligence. As is the case with other kinds of psychological and educational measurement, intelligence is measured indirectly by means of what the individual knows and does. In short, intelligence is inferred from studying performance. There is no yardstick for measuring the intellect in terms of a "psychological inch."

The unique units for measuring intelligence are the mental age and the intelligence quotient. The mental age of an individual is divided by his chronological age and multiplied by 100 to give the I.Q. When the child's mental age is the same as his chronological age, he has an I.Q. of 100 and is considered to be "average." Actually, it is worth noting that "average" in intelligence is a *band*, not a point; *i.e.*, average I.Q. varies from 85 to 115, or from 90 to 110. Some authorities make the average band wider than do others. Growth in mental age, like other aspects of growth, tends to slow down as maturity is approached. At this time, about age sixteen, it becomes advantageous to replace the I.Q. connotation with measures of the person's relative standing, such as decile or percentile ratings (see Glossary). It is apparent that the mental-age unit is not an equal distance between levels of difficulty of performance, as are inches on a yardstick; *i.e.*, the difference between an M.A. of one year and an M.A. of two years is not the same as the difference between an M.A. of fourteen years and one of fifteen years. The unit for each year is determined by studying a large number of individuals of various chronological years. Tasks that are performed by the majority of three-,

seven-, or fourteen-year-olds are, on the basis of this *average* performance, assigned a mental-age value of three, seven, or fourteen years. This may be clarified by citing some of the typical tasks at various age levels which are used in the revision of the Stanford-Binet tests of intelligence.

Year 3 to 3 years six months:
- Strings four beads in two minutes.
- Names 12 of 18 objects presented in picture form: car, hat, telephone, key, airplane, ball, knife, block, flag, horse, feet, coat, ship, etc.
- Builds a bridge from three blocks.
- Points to a picture among other pictures after being shown the picture individually.
- Copies a circle.
- Repeats three digits.
- (The subject is given one month M.A. credit for each correct response.)

Year 7:
- Points out absurdities in three of four pictures.
- Indicates similarities between such things as wood and coal, apple and peach, ship and automobile, iron and silver (2 of 4 chances).
- Copies a diamond.
- Gives logical answer to questions; *e.g.*, "What's the thing for you to do when you have broken something which belongs to someone else?"
- Indicates opposites: "Brother is a boy; sister is a _____."
- Repeats five digits.
- (The subject is given two months M.A. credit for each correct response.)

Year 14:
- Gives logical answer to a problem situation.
- Indicates absurdity in pictured situation.
- Orients self to direction; *i.e.*, "Which direction would you have to face so your right hand would be toward the north?" (3 of 5).
- Gives meaning of abstract words (generosity, independent—2 of 5).
- Solves a problem requiring ingenuity.
- Shows how opposites are alike; *i.e.*, "In what way are winter and summer alike?" [2]

Other test items have similar mental-age values. If the sum of these values equals the chronological age of the subject being tested the resulting I.Q. is 100. But if a seven-year-old child answers all the previous questions and two on the seventh-year level and in addition answers two items on the eighth-year level, two on the ninth-year level, one on the tenth-year level, and one on the eleventh-year level but misses all on the next level, his total mental age is ninety-two months (two months for each answer is allowed at this age). This figure, divided by his chrono-

[2] Lewis M. Terman and Maud A. Merrill, *Directions for Administering Forms L and M, Revision of the Stanford-Binet Tests of Intelligence*, Boston: Houghton Mifflin Company, 1937.

logical age of eighty-four months, indicates that his I.Q. on the Stanford-Binet is 110, as shown in the following table. Similarly, if a subject does

Number of tests	*M.A. equivalent, months*
Up to 6-year level, all	72
7-year level, 4	8
8-year level, 2	4
9-year level, 2	4
10-year level, 1	2
11-year level, 1	2
	92, total

M.A. ÷ CA × 100 = I.Q. $92 \div 84 \times 100 = 110$ I.Q.

not answer the questions which are average for his age, his I.Q. will be proportionately lower.

The above examples are based on what is known as an individual test—one tester for one examinee. Not all schools can afford the cost of such accurate and detailed testing, so group tests are more typically given. These group tests are also known as pencil-and-paper tests—each subject is presented with a test booklet in which he records his answers in writing. The individual merely answers as many of the questions on the entire test as he can in the time allowed. His score is simply the total number of correct responses which can be translated into a mental-age value. This is divided by his age in chronological years to yield the I.Q.

Authors of tests attempt to make various tests yield equivalent values. But there is usually some variation from test to test, depending on what the particular authors believe to be the most important components of intelligence. Moreover, as has previously been indicated, a subject will earn somewhat variant scores on equivalent forms of tests bearing the same title because he may feel better on one day than another or because his emotions (poise or motivation) differ from time to time. This indicates the fallacy of saying that a child has an I.Q. of precisely 92, 107, or 132. The variability of tests indicates the need for identifying the test by name. Thus, instead of saying, "Bill has an I.Q. of 98," it would be more indicative of the teacher's knowledge of the nature and purpose of the test if he were to say, "Bill has an I.Q. of about 100 on the Blank Test." (Incidentally, it is erroneous to speak of an "I.Q. test." It is an "intelligence test.")

At the high school and college levels, students have reached a time when their mental ages are increasing less rapidly than their chronological ages. Corrections must then be made to compute the I.Q. by using a denominator which is less than the actual life age. Hence, it is more informative to speak of a percentile rank than to use the term I.Q. The per-

centile rank is a number which indicates a person's relative position in a theoretical group of 100. A percentile rank of 1 on a test would indicate that that person made the lowest score in a theoretical group of 100. A percentile rank of 50 would indicate that just as many pupils ranked above that score as below that score. The highest score would be indicated by 100. Assume that a test containing 100 items was given. The top score was 75, the lowest score was 25, and twelve students in the middle of the distribution received a score of 52 (forty-four students received more than 52 and forty-four students received less than 52). The student receiving 75 would have a percentile score of 100, the one receiving 25 would have a percentile score of 1, and the middle twelve students would be in the 50th percentile.

The I.Q. can be translated into percentile rank, which indicates the pupil's comparative standing in the class. Thus, on one widely used group intelligence test sample I.Q.s and their meaning in percentiles are as follows:

Score	*I.Q. (at age 12)*	*Percentile*
5	82	6
17	94	30
29	106	70
35	112	84
44	121	96
56	140	100

An individual scoring over 140 I.Q. on this test would still be ranked in the 100th percentile, and theoretically no pupil would exceed him in a group of 100. In general, an I.Q. of 140 would occur only once in 200 to 250 cases, depending on the test used.

Evaluation of Personality. The measurement of personality is under much the same handicap as measurement of intelligence testing. There is no way to measure it directly—it must be inferred from verbal or overt behavior. Among the techniques for evaluating personality are (1) rating scales, (2) attitude scales, (3) interest inventories, (4) adjustment inventories, and (5) projective techniques. Each of these approaches gives a picture of the individual and, if the teacher will observe the inherent limitations of each method, provides a more objective view than could be achieved by personal observation.

1. A rating scale asks others to evaluate the person being studied. By this method a pupil may be asked to indicate the five individuals with whom he would most like to work, to play, to talk, etc., in the order of his choice. Or five names may be given and the respondent asked to relist them in the order of his preference. Two features of the rating scale are significant: There must be rather intimate acquaintanceship between

the rater and the ratee, and the technique is obviously subjective in nature.

2. An attitude scale asks the subject to tell how he feels about certain propositions or situations. The scale may be based on two to five degrees of attitude: simply "like" or "dislike"; or "like very much," "like mildly," "no feeling," "dislike mildly" or "dislike intensely." Attitudes regarding peer relationships, family life, school responsibilities, community activities, racial questions, or religious attitudes may be investigated. The value of such a scale is limited because there may be a tendency for the subject to give answers that he feels will please the teacher. The scale is artificial in that some of the situations may not have been encountered by the individual, and while he may answer the questions honestly, in the actual situation his conduct may vary from his answer. However, if the limitations are kept in mind the attitude inventory may be valuable when considered with other data.

3. The interest inventory constitutes an approach to discovering a pupil's interests rapidly. Interest inventories are widely used in occupational counseling—the inventory is not a measure of ability but indicates whether or not the pupil has interests similar to those of people who are satisfied in various occupations. They can also be used to guide the selection of study units, extra reading, hobby development, and special reports.

4. The adjustment inventory consists of a number of questions which delve into the emotional, social, and school life of the individual. The questions usually concern health routines and personal habits. The following questions are representative of those found on adjustment inventories: [8]

Are your eyes very sensitive to light?
Did you ever have a strong desire to run away from home?
Do you sometimes feel that your parents are disappointed in you?
Has either of your parents frequently criticized you unjustly?
In school is it difficult for you to give an oral report before the class?
Do you sometimes envy the happiness that others seem to enjoy?
Do you frequently have spells of dizziness?
Do you get angry easily?
Do you ever cross the street to avoid meeting somebody?
Was your father what you would consider your ideal of manhood?
Does criticism disturb you greatly?
Does it upset you considerably to have a teacher call on you unexpectedly.
Do you worry too long over humiliating experiences?
Do ideas often run through your head so that you cannot sleep?

[8] Hugh M. Bell, *The Adjustment Inventory: Student Form*, Stanford, Calif.: Stanford University Press, 1934.

Pupils' adjustment in various areas (the home, society, health, etc.) can be seen by using such an instrument. A general, comparative view of the pupil can be secured from the results; but probably the inventory's greatest value comes from using the items on the test that the subject has answered atypically *as the starting point for an interview.* The greatest benefit will be derived from the inventory when one gets at the causes of shyness, antagonism toward parents, frequent headaches, vague worries, and so on. Very frequently the teacher can offer advice about a change of regime or of attitude that will be helpful to the pupil in improving his adjustment. One writer warns that the teacher's great need to do something about personality problems often leads him to accept instruments of very low objective value (238, p. 26). Another authority finds it surprising that personality tests should continue to be used in view of the preponderance of negative findings concerning their value (264, p. 614). A careful reading of the manual which accompanies such tests would help to prevent misuse; but, again, the limitation must be kept in mind.[4]

5. Projective techniques include a wide variety of specific approaches to the study of personality. By the projective technique the respondent "adds structure to an unstructured situation." Persons giving what have been determined to be average responses are adjudged to be normal, while those giving unique reports are judged to be deviants from the normal. Studies of both typical and atypical responses given by an individual permit an expert to get a view of the "private life" of the subject.

Play techniques work in much the same manner. A child is given some toys. What he does with the toys, what he makes the toys do, enables the analyst to see motivations, interests, and biases that the child would be unable to verbalize. The toys are unstructured—what the child does with them contributes structure in terms of the particular child. The ending that a child gives a partially completed story or the meaning that he attaches to a picture provides clues to his personality orientation.

These techniques are valuable in the hands of an expert, and the teacher can also use the principles to advantage. Observing the way a child spontaneously plays, the recurrent themes expressed in his paintings and drawings, and the kinds of stories he writes will give the teacher

[4] There are adjustment inventories or personality scales designed for various ages and grade levels. The teacher who desires to use test data to supplement other sources of information would be well advised to become acquainted with the *Mental Measurements Yearbook,* edited by Oscar K. Buros and published periodically (238). These volumes list the names, prices, and publishers of various educational tests: personality, intelligence, subject-matter, diagnostic, and aptitude. The values and limitations of many of the tests are described by authoritative reviewers, and whenever possible data on reliability and validity are given.

valuable clues to his problems of adjustment. However, it cannot be too strongly emphasized that direct interpretation is only for the expert. The teacher should use what he sees only as clues for further investigation. He should seek to corroborate what *might be* with evidence gleaned from other sources—inventories, other teachers' reports, and other children's reports.

Measurement of Achievement. A most valuable kind of test for the classroom teacher is the achievement test, which measures status in terms of subject matter (reading, arithmetic, language, algebra, history, science, etc.). Such tests, adequately standardized, objective, reliable, and valid, enable one to make the assertion, for example, that pupils in the third grade will vary from first grade to eighth grade in reading ability. When the teacher has an objective means for evaluating these differences, he will see the futility of teaching as though all pupils were alike.

Achievement tests are frequently designed to indicate status in one subject. Others, known as achievement batteries, are divided into parts which yield separate scores in such things as language, reading, arithmetic, spelling, science, and social studies. The raw scores are easily translated into such meaningful data as grade norms, age norms, or percentile ranks for various ages and grades. These data can in turn be used as a guide to the selection of appropriately graded reading material, the planning of individual assignments, and the placement of pupils in proper grades. This information may also be helpful in the diagnosis of specific difficulties; *e.g.*, poor work in arithmetic may be only a reflection of the fact that the pupil has difficulty in reading the problems.

Probably the best use to which the teacher can put these instruments is to give one form of the test at the beginning of the term and an equivalent form at the end of the term. This procedure has two very significant advantages. One is that the teacher can see the progress a given pupil has made even though he may be well below class average on both tests. It will thus be a means of preventing uncalled-for discouragement on the teacher's part. The other advantage is that the pupil sees objective evidence of his own growth. Both the superior and the slow pupil can profit from this information. The superior pupil will feel encouraged only when he has maintained his relative advantage. The slow pupil can see that in terms of where he was at the beginning of the year he *is* growing, even though slowly.

If standardized tests are to serve their maximum usefulness they must be administered and scored strictly in accordance with the directions that are provided in the instruction manual. Since the tests are standardized on the basis of the procedures indicated in the directions, any deviation from the stated procedures will warp the results and an erroneous "measurement" of the subjects will result. It is known that some teach-

ers have "shaved the time" on the first administration and allow a minute or two extra on the second administration. They may follow the advice not to give any help on the first test but will ignore the directions and give a little help on the second. Such procedures, of course, merely result in wasted time and effort. At best tests are only approximations. Any procedure that distorts the results serves but to invalidate the data which are obtained.

Aptitude and Diagnostic Tests. An aptitude test is designed to estimate probable future performance. An intelligence test might justifiably be considered an aptitude test—one which indicates an important part of capacity to perform in many areas. An aptitude test is also called a prognostic test—it attempts to predict the future performance of the individual in a specific area. Thus, there are reading-readiness tests which predict the probable course of the pupil's acquisition of reading skills. There are musical ability, or aptitude, tests, which predict the individual's probable success in singing or playing some musical instrument. Aptitude tests have also been formulated to predict success in mechanical pursuits, foreign languages, and various branches of mathematics. Test results may be used to section classes into ability groups or to determine whether the probability of failure is so great that the student should be advised to take other subjects. Subject selection or classification into groups is safe when the scores of the subject are extremely high or low. But it must be remembered that individual differences vary on a continuous scale and are of degree rather than of kind. Hence, difficulty is encountered with those pupils on the borderline between normality and inferiority. In such cases, it is well to consider other factors, such as past performance, personality traits of application and tenacity, and the expressed desire of the pupil. If the case is still doubtful, there remains the pragmatic test, namely, a "trial run" in the area concerned.

Diagnostic tests further illustrate the range and variety of differences in the classroom. A diagnostic test deals with specific subdivisions of a subject and consequently suggests some specific remedial procedures that may be executed by the teacher. (These tests are sometimes erroneously called diganostic and remedial tests. Actually, no test is remedial—remediation is something the teacher must undertake.) A diagnostic test in arithmetic may indicate that a particular number combination is giving difficulty (for example, a persistent answer that 8×7 is 54) or that a particular process (addition, subtraction, multiplication) is inadequately understood. A diagnostic test in reading may indicate the need for vocabulary drill, the need for attention to details, or failure to comprehend meaning. But the teacher himself makes the particular diagnosis on the basis of the evidence.

Both aptitude tests and diagnostic tests illustrate the desirability and advantage of *specificity in testing*. Knowledge of individual differences becomes more helpful as it becomes more precise. This is indicated in the following passage: "The more 'general' the intelligence test, the less its value. By increasing the specificity . . . we add to its value. Charles Dudley Warner once shot a bear by 'aiming at it generally,' but it is a poor method." [8]

VALUES OF MEASUREMENT

The Improvement of Instruction. The all-inclusive aim of psychological measurement in the school is to improve instruction. This inclusive aim is reflected in the following list of values of testing:

1. Tests evaluate progress toward goals. By giving tests at the beginning and end of the term the teacher has an objective means for evaluating pupil growth in specific areas. After determining the probable reasons for success or failure with given pupils the teacher can then formulate new procedures for the coming year.

2. Tests can show where emphasis has been placed. Achievement and diagnostic tests can show the teacher whether or not balance has been maintained in the instructional program. For instance, they may show that insufficient attention has been devoted to vocabulary or use of reference materials in the reading program. They may show that problem solving has been emphasized to the exclusion of drill on fundamentals of multiplication, division, etc., in the arithmetic program.

3. Tests can help to determine effective methods. By comparing the progress of two groups approximately equivalent in mental age, chronological age, grade level, etc., through initial and end-of-the-term tests, the teacher can evaluate the comparative values of two teaching methods.

4. Tests can help to motivate pupils. While high test scores are not the sole aim of education, such scores can provide a source of motivation. As we have seen, knowledge of progress is an effective means of motivation both for individual pupils and for the entire class.

5. Tests can help to maintain standards. By referring to the norms accompanying the test, the teacher can decide whether or not his class is *approximating* the results that are ordinarily expected of groups similar to his own.

6. Tests give training in thinking and using language. In taking a test the pupil has an opportunity to use what he knows in a different context from that which occurs in daily classwork or in his out-of-school life. The more such opportunities are provided the more firmly con-

[8] Knight Dunlap, *Habits: Their Making and Unmaking*, New York: Liveright Publishing Corp., 1949, p. 266.

solidated learning will be. Although many tests call only for recitation of facts, many others call for the use of facts in solving problems.

7. Tests can be used in pupil guidance. The data supplied by tests can be effectively used to *help* pupils select future courses. The data may also be used to *help* the pupil select the curriculum—vocational or academic—from which he will probably receive the greatest profit. It should be emphasized that such choice is not automatic—the choice should also consider the expressed interest of the pupil, his school background, his socioeconomic status (103) and the probable future demand for the work which he desires to study.

8. Tests are a valuable part of pupil records. The meaning of test data is widely understood, and when they are entered in the pupil's permanent record they can help other teachers understand him better. Two precautions should be urged. One is that the name of the test, the form used, and the date of administration should be entered along with the results. The other is that the teacher should use such data as *background information,* not as a measure of present status.

9. Tests can be used by supervisors to help teachers. The supervisor who appreciates the value and limitations of tests can use the data to suggest changes and improvement in teaching procedures. However, if tests are used as the sole criterion for evaluating teacher effectiveness, they are being grossly misused. The general atmosphere of the school, the composition of the particular class, and the materials and resources available to the teacher are other factors that should be taken into consideration. The test data should serve only as *supplementary* evidence.

Precautions for Using Tests. The value of tests in determining individual differences will be greatly enhanced if the user is fully aware of the things that tests do *not* do. It cannot be stated too emphatically that present psychological and educational tests do not measure with the accuracy of a yardstick or a laboratory balance. Psychological tests yield only approximations, estimations, and indications which are, however, extremely valuable if used with due regard to the limitations.

Tests do not measure motivation. An intelligence test does not indicate the determination of a pupil to use effectively the intelligence that is indicated on the test (79). A reading-readiness test does not measure the willingness of a child to keep trying to master reading skills. A reading-achievement test does not measure the quality of books that pupils voluntarily select for leisure-time reading.

Tests do not provide answers. High blood pressure, rapid pulse, or high temperature does not reveal the patient's illness. These data do, however, help the doctor make a diagnosis. Scores on a variety of tests do not tell the teacher how to bring about better adjustment on the part of the pupil. But the scores help the teacher determine the area of need.

Tests do not provide a valid basis for assigning marks. Even though the progress indicated by initial and end-of-term tests is used in grading, home background, illnesses, absences and distracting (and sometimes valuable) interests must also be considered if evaluation is to take into account individual differences.

It is obvious that educational tests are not either-or matters. The wise teacher will accept them for what they are worth, not as perfect instruments. The warning in the old cliché "The clumsy carpenter blames his tools" should be heeded by the teacher. He must use testing tools skillfully rather than expect the tests to do the work. This skill is not a native endowment; it comes from study and practice. The imperfections inherent in the tests impose heavy obligations upon those who use them —especially because they are dealing with human lives.

SUMMARY

Psychological Principle	*Practical Application*
Individual differences exist even in relatively homogeneous groups.	*Teachers must* take these differences into account if they are to be most effective.
There is a tendency to classify people into types or categories.	Teachers must avoid the temptation to think in terms of discrete types.
Individual differences permit the specialization demanded in a complex society.	Teachers must encourage and develop differences rather than mould pupils into sameness.
A test is a sample of behavior which provides a base for estimates.	*Teachers must interpret tests and* not take results at face value.
A standardized test is one for which norms have been established.	Teachers should recognize that norms are not standards for individuals.
Dependable tests should be objective.	Interpretation of those tests should be as objective as possible.
A valid test is one that measures what it purports to measure.	Other data should be used to corroborate test results.
A reliable test gives consistent results under similar conditions.	Test data must be interpreted in terms of the time which has elapsed since the administration of the test.
A test should be economical.	Data must be used to promote understanding of individuals.
Intelligence is measured indirectly by what one knows and does.	Teachers must always attempt to see the individual in his total functioning.
Personality inventories are designed to probe various kinds of adjustment.	Inventory results should not obscure the teacher's everyday observation of behavior.
Achievement tests give objective evidence of academic accomplishment.	*Achievement* tests should be used as positive motivation—not as threats.

Aptitude tests give indications of probable future adjustment.

The over-all aim of tests is to bring about improved teaching.

Aptitude tests should be used to avoid gross errors in pupil guidance.

Tests should be used in evaluating pupil and teacher—not as bases for grading.

PROBLEMS AND EXERCISES

1. Try to obtain from one of your college instructors or some teacher you know the raw scores obtained from the administration of a standardized test or an objective test containing about 100 items. Draw a curve of distribution for the scores by placing each score on a horizontal line and using the number of pupils earning each score as the altitude for each score column. Draw a line joining the tops of the columns. Does the line resemble the normal curve of distribution? How would you explain the shape of the curve?

2. Explain in your own words the meaning of the term "standardized," "validity," "reliability," "objectivity," and "adequate sampling."

3. When a child has lived in a poor environment and has not had a chance to learn those facts involved in a standardized intelligence test, would you say he is any less intelligent than another child of his age who has had the chance to learn these facts?

4. What classroom uses would you suggest for a personality inventory? For an interest inventory?

5. Get several of your classmates to draw their conception of such abstractions as happiness, sadness, liberty, and selfishness. Is there any similarity in the drawings? Get the individuals to tell why they drew what they did.

6. Suggest several uses to which an achievement battery might be put at the eighth-grade level. At the high school level.

7. Consult Oscar K. Buros (ed.), *Mental Measurements Yearbook* (the latest edition available) and make a list of twenty aptitude and/or diagnostic tests that could be useful at the school level for which you are preparing to teach.

8. What responsibilities do the limitations indicated place upon the classroom teacher?

SUGGESTED ADDITIONAL READINGS

Froehlich, Clifford P., and Arthur L. Benson, *Guidance Testing*, Chicago: Science Research Associates, Inc., 1948.

This booklet deals with the use and limitations of testing in effective pupil guidance. Techniques for interpreting and using test results are explained in sufficient detail to provide the teacher practical help.

Thut, I. N., and J. Raymond Gerberich, *Foundations of Method for Secondary Schools*, New York: McGraw-Hill Book Company, Inc., 1949, pp. 230–268.

In this chapter dealing with pupil progress, all kinds of standardized tests are considered: scales, achievement batteries, survey tests, diagnostic tests, prognostic tests, and personality inventories. There is a section dealing with teacher-made objective tests.

Torgeson, Theodore L., *Studying Children: Diagnostic and Remedial Procedures in Teaching*, New York: The Dryden Press, Inc., 1947, pp. 144–161.

The author shows how tests can facilitate the understanding of pupils. His presentation is illustrated with a detailed analysis of some tests that have been administered in typical school situations.

Traxler, Arthur E., Robert Jacobs, Margaret Selover, and Agatha Townsend, *Introduction to Testing and the Use of Test Results in Public Schools*, New York: Harper & Brothers, 1953.

This compact volume is a how-to-do-it book for teachers. It describes the purposes of tests and tells how they should be given, scored, and interpreted. Illustrations are taken from currently used tests.

AUDIO-VISUAL MATERIAL

Problem Children, Ohio Division of Mental Hygiene, 1210 State Office Building, Columbus, Ohio. (20 min, BW, sd.)

Factors causing the misbehavior of two junior high school boys; *i.e.*, relationships in the home and school. It shows how parents and teachers can work together to help solve personality problems.

Social Development, McGraw-Hill Book Company, Inc., 330 West 42d St., New York 36. (16 min, BW, sd.)

In showing social behavior at various age levels, this film deals with emotional conflicts that come with the "gang age," when home and family are no longer the center of the individual's life.

13

THE CHILD AS A LEARNER

THIS CHAPTER and the one following are vital to both the elementary teacher and the high school teacher. Teachers of young children need, of course, to understand the course that development takes in their pupils. They need also to understand what the child is becoming in order to help him prepare for future adjustments. Teachers of adolescents must know their pupils as of today. They must also know the background of their pupils in order to understand why they have developed as they have.

All that has previously been said about learning, transfer, intelligence and growing is pertinent to this chapter. What will later be said about mental health, language, culture, and emotions is also pertinent. This chapter stresses several psychological factors whose importance might otherwise be overlooked.

SOME PSYCHOLOGICAL CHARACTERISTICS OF CHILDREN

Children Are Interested in Process. One of the practical difficulties facing teachers is the fact that young persons do not have the maturity and experience to enable them wholeheartedly to accept the purposes formulated by adults. Adults do not always seem to understand children in this respect. When a child is asked, "Why did you do that?" he might reply, "It's fun to do it." His orientation is toward the action, not toward the result of the action. This can most readily be seen in the actions of a very young child—age eighteen months to two years old. He drops a spoon, and his mother picks it up, saying, "Don't do that again." But he drops the spoon again. He has simply discovered that spoon dropping is fun and that it is a way to play with his mother.

Children of school age will ask numberless questions. The parents and teacher, having read books on child psychology, patiently answer the questions "in terms the child can understand" *and he does understand.* Presently the child's lack of experience shows itself when he runs out of questions. He then repeats the same questions, which are again answered

morrow" are more important than "next week" and the "end of the term." For example, primary teachers have noted that if several weeks are devoted to preparing a Christmas program interest wanes before the actual performance. Consequently they stress "finishing the decorations today, sending the invitations this afternoon, and completing the costumes tomorrow."

Immediate goals should also characterize teaching objectives. The need for immediate goals is explained by the young pupil's short attention span and his lack of an accurate concept of time. He will try and often can pay attention for twenty or thirty minutes, but he is likely to develop unnecessary tensions. The teacher should be on the alert for evidences of fatigue—restlessness and wandering attention—and as soon as practicable shift to another activity. The duration of the attention span will vary greatly with age and still more with the importance of the task. A nine-year-old may spend all morning with his mechanical building set but find twenty minutes' drill in arithmetic boring beyond endurance.

It has been previously indicated that every teacher has the responsibility of telling his pupils what they will get out of the subject he teaches. Although the pupil's ability to comprehend the significance of the future will grow steadily from the first grade, the elementary teacher should study the reactions of pupils to see how effective reference to the future is.

A feeling of success or failure does not stem from an absolute standard of performance. What is success for one person may be failure for another. It is therefore futile to make specific recommendations to teachers. However, experiments show that the appropriateness of a child's goals depend on the kind of experiences he has had. If his background consists of rather steady success, his level of aspiration tends to be geared to reality. If his history is one of repeated failure, his level of aspiration is not so frequently appropriate to his ability. Pupils in the latter group may hope for too much—they are visionary dreamers. Others cease to try (15). Thus, it is clear that the feeling of success, which mental hygienists deem to be so important, depends to a large extent upon the teacher's recognition of individual differences. At the childhood level this means participation in tasks which the *child* thinks are important. As he matures, the nature of these tasks may become more abstract in meaning.

The old idea that a child would rather have a quarter today than a dollar tomorrow has psychological validity. It is a mark of maturity to look toward the future in evaluating the present. Teachers should not only give attention to immediate goals for children but gradually begin to show them that remote considerations should also receive attention.

Children Need Routine. Consistent routines will give the child feelings of security and comfort. This does not mean that a questionable method should be adhered to simply for the sake of consistency. There are many valid reasons for interrupting a routine. But teachers should see to it that a *guiding* sequence of activities and a somewhat uniform method of treatment accompany variety and contrast.

The desire for routine is manifested at a very early age. When a baby is put to bed he must have his drink, throw a kiss to all the members of the family, hear a story, say his prayers, and have a certain toy. If the routine is completed he will go to sleep immediately and quietly. But if the routine is upset there is likely to be a somewhat stormy period of protest. Children in school show the same desire for routine. They miss the spelling period if it does not take place at the usual time. They show a preference for the game they have played on previous days.

The desire for routine is also reflected in such matters as environment. Child psychology shows that abrupt changes in environment often cause emotional disturbances, and migratory habits of the family are recognized as contributing factors to problem behavior. To an extent consistent with progressive goals of education, teachers should provide for routine schedules and uniformity in methods and approaches. Other difficulties in adjustment which children experience are caused by conflicting values in the home and the school. Children with problems are frequently those who discover that the procedures and aims of the teacher are not consistent with those in his home (207). The teacher can avoid some of the conflict with the home by learning something about that home.

From the psychological standpoint, the need for consistency derives from the fact that incentives to learning are reward and punishment. Habit formation is encouraged by steady pressures; hence, adult inconsistency weakens pressure and produces inefficient learning. Moreover, children need and seek the approval of adults. Unless adults are somewhat consistent from one time to another, the child loses a steady goal for which to strive. A teacher should not allow pupils to interrupt the talk or recitation of others on one day and condemn it the next. Nor should he treat questions courteously one day and the next day brand them as impertinent.

Of course, it must be remembered that consistency is one element in a good classroom atmosphere for children—not the sum total of that atmosphere.

Play Is Important Business. Mental hygienists encourage all persons to round out their lives by regularly participating in some form of recreation or play. Child psychologists stress play as *the* important business of a child. Not only is play a natural and significant activity in the eyes of

a child, but it is important from the adult standpoint of efficient learning. It gives the child an opportunity to come in close contact with his environment. It builds muscle and fosters physical endurance. Play provides an opportunity to practice the physical skills of balance, timing, and coordination. It provides for the acquisition and exercise of social skills—cooperation, conversation, mutual respect, friendliness, and courtesy. It provides emotional satisfaction in that it fills the need for companionship, achievement, recognition, and freedom.

Children have been experimentally caused to regress to more infantile patterns of behavior by creating frustration in their play activities. This was done by permitting them to play freely in a room with rather limited materials. Next the toys were placed with many others in another part of the room, and each child was allowed to play there long enough to become thoroughly interested (that is, to form a goal). Then the first toys were picked up and placed back in their original place, the child was led back to the limited materials, and a wire screen was lowered, blocking the child off from the more attractive play situation. Regression was shown by relative lack of constructiveness in play, decreased freedom of movement, decreased verbal activity, decreased happiness, and increased restlessness and aggressiveness (hitting, kicking, destroying) (15).

This experiment gives some support to the observation of child specialists and mental hygienists that the child takes his play seriously because his goals come from play. This means that the adult must avoid disparaging remarks about the silliness or futility of play. Just as an adult dislikes interruptions when he is engrossed in work, the child reacts strongly to interruptions of his play activities. The adult must also realize that the short attention span of a young child causes him to shift rapidly from one thing to another.

Capitalizing on the importance of play is by no means a matter of watering down the curriculum. Rather, encouraging play, and a great deal of it, recognizes a basic psychological characteristic of childhood. There is good reason to agree with the child-guidance experts when they say that depriving children of ample opportunity to play imposes handicaps upon them that they may never completely overcome. This is seen in adults who as children were kept too busy at schoolwork or who had no companions "fit to play with" and who now lack social graces or basic physical skills. It is seen in those adults who are so serious about their profession or occupation that they have no time for recreation.

There is great possibility of utilizing play as a source of motivation for effective learning. Playing store or playing at being mayor calls for application of knowledge. Making a game of spelling or arithmetic in no way diminishes the need for accuracy or for exact knowledge. One of the most interesting class sessions the author has observed was one in

which two girls in a high school social-studies class recounted to their classmates a make-believe journey they had taken to Bolivia. Their account of a descent from high altitudes via narrow-gauge railroads, their experiences in the market, and their observation of schools and artisans at work revealed a background of patient and detailed research.

Whether or not play can always be used as an approach to learning, certain elements—fun, freedom, and friendliness—that are associated with play should be used in effective teaching. A courteous, relaxed, active classroom atmosphere certainly does not connote drudgery and compulsion. The more closely teachers can make their schoolwork resemble play the greater the likelihood that work will become a vital, welcome activity.

Through play the child can vent feelings of hostility, work off his disappointments, and cover his fears (11). Through observing the child at play the adult can discern some of the child's dominant motives and thus understand him better. The way in which the youngster manipulates materials, associates with others, and carries on conversation in spontaneous play can serve to reveal his dominant personality trends.

OTHER PSYCHOLOGICAL FACTORS IN TEACHING APPROACHES

The Child Brings His Family to School. The statement that "child behavior reflects parental handling" is one evidence that the child brings his family to school. His self-confidence, his willingness to converse with others, his interest in school tasks all more or less directly reflect the way he has been treated at home (250). Many of his attitudes—toward work, toward discipline, toward honesty, and toward cooperation—have their genesis in what he has heard and experienced in his family group.

Parents want to be assured that their children are progressing just as rapidly and performing just as well as others in the class. Despite individual differences, teachers at times try to secure this end in an attempt to please themselves and the parents. As one teacher said, "Of course I urged and encouraged constantly—aided and abetted by parents who urged, threatened, and no doubt bribed. Small wonder that the reading did not improve. I took away the third-grade readers and from the discard in the basement dug up some old primers and first readers. The children in the slow group could read these, and our reading class became the happy experience it should always have been. My pupils were pleased with their success and enjoyed the stories. I am a happier teacher, too."

The obstacle to using differentiated methods and materials seems to be a lack of courage on the part of administrators and teachers. As one teacher vehemently put it, "Teachers and administrators are afraid to tell

a parent that his son or daughter cannot compete with other individuals in the class. Subterfuge, underhandedness, and subtle segregation all combine to make one realize that when a teacher or administrator yaps about treating each child as an individual they are really mouthing 'flapdoodles.' They are giving lip service to something they don't really mean." Certainly, it is true that the most frequent response from teachers who are advised to use differentiated instruction and goals is, "The parents will object to having their children treated differently." This is not uniformly true. Parents are concerned with the welfare of their children, and when the case is clearly and fairly presented most of them will agree to the teacher's plan.

The following quotation,[1] a continuation of the study mentioned on page 198, illustrates how the bold approach can help both parents and child.

> After about a month the parents began to see that, whether or not Edith's retardation was real or due to emotional causes, she would nevertheless benefit from placement in a class where there was a differentiated program planned to meet her needs and where the teacher, because of the lower register, could give her more individual attention. They began to realize that the increased sense of failure she experienced in the fourth grade increased her emotional problems. With the school's cooperation, the social worker and the parents sat in the "CRMD" ["Children with Retarded Mental Development"] class for a few sessions. Both parents were impressed with the enthusiasm of the children and their active participation in the lessons. Mrs. A was somewhat concerned, however, over what she considered the lack of quiet and order in the room. Mr. A commented on how much the children knew and was surprised to learn that Edith, who knew far less, had a higher I.Q. than many of them.
>
> . . . the child was finally in a situation where she could participate and compete at her own level.

Frankness in dealing with parents is more than a matter of method. The fact that a child's psychological orientation is largely determined by parental objectivity makes frankness necessary. For the maximum welfare of the child, the teacher must present the facts and then hope that the parents will be convinced. Certainly, the possibility of encountering parental objection does not warrant ignoring the problem and thereby reducing the child's chances to develop to his greatest potential.

Another way in which the child brings his family to school is in his worry about family welfare. Illness at home, family quarrels, or financial problems may make it difficult for the child to concentrate on school activities. The teacher can become aware of such problems by talking with

the pupil, visiting his home, or reading the reports of other teachers who do so.

These generalizations are just as pertinent for the high school teacher as they are for the grade school teacher. The high school youngster may be under pressure at home to accomplish the impossible or may have family troubles which hamper his progress at school. His attitude toward school is a reflection of family orientation.

Health and Other Physical Factors Must Be Considered. The teacher should recognize the psychological importance of health factors in learning and growth. The following list summarizes the teacher's responsibilities with regard to the health of his pupils.

1. The teacher should give direct instruction in physical hygiene, covering such aspects as diet, rest, habits of cleanliness, adequate sleep, and periodic physical examinations.

2. He should encourage good health habits by praising pupils who exercise them.

3. He should make periodic inspections of the classroom for cleanliness and proper ventilation and heating, and institute a regular routine of rest and exercise.

4. He should encourage periodic health examinations in the school and the maintenance of adequate and continuous health records which are readily available to all teachers.

5. He should accompany the pupils when physical examinations are given and, if possible, help conduct the examination. He will learn a good deal more about the child's physical health from such an experience.

Pupil-Teacher Relationships as a Psychological Factor in Learning. Teacher-pupil relationships are important factors in educational psychology. The following points illustrate that healthful relationships will foster the pupil's emotional, social, and intellectual growth.

1. Acceptance. Accepting a child means a functional recognition of his mental, emotional, social, and physical limitations. It means that the teacher has faith in himself and the pupil and patience with the slow process of growth.

2. Security. A feeling of being liked and accepted is partly responsible for the child's sense of security. But feelings of security are also dependent upon the child's knowing what he can do and accomplish. Therefore, it is incumbent upon the teacher to see that tasks are scaled to the level of the child's ability. Distribution of duties in the classroom will make children feel that they are contributors.

3. Yielding to differences. Balance should be struck between authoritarianism and lack of direction. The child's tendency to shyness should not be met with firm determination to make him participate and be congenial. The child's belief that it is all right to help another should not be

branded as unequivocal cheating. The child's desire to play should not be viewed as laziness or recalcitrance.

4. Democratic procedures. Democracy implies mutual respect, cooperative planning, and shared responsibility and power. The voice of the pupils should be considered in formulating aims and in planning activities.

5. Friendliness. This word comes close to epitomizing the foregoing factors. Teacher-pupil relationships cannot be of the most salutary kind unless there is a genuine liking of pupils on the part of the teacher. There are two things that can be done to improve one's liking for pupils. One is to become so familiar with the characteristics of children that the teacher knows what can be expected of them. The second thing is to become acquainted with each child as an individual, with his abilities, his interests, his neighborhood, his home background, and his record of past performance. Teachers can show friendliness by being consistently courteous, taking time to listen to him, and avoiding situations which might lead to fear.

The importance of teacher-pupil relations can perhaps best be shown by reflecting on our own early school experiences. The child is suddenly thrust into the strange world of school with a surrogate parent in charge. He must learn to sit still for what seem to him long periods of time. He must learn to suppress the desire to speak until it is proper to do so. He must adapt his physical needs to a new schedule. He must no longer kick and scream when he does not get his way. And in all this, the strange adult moves with absolute authority and omniscience. In such a world a kind word, a pat on the head, a friendly smile, or an expression of praise makes a tremendous difference.

The Teacher's View of Deviant Behavior. The teacher must always remember that all behavior is caused. It is especially important to consider causative forces in evaluating deviant behavior. Unfortunately, many teachers either do not see the implications of the fact that behavior is caused or find it inconvenient to apply their knowledge in the exigencies of the moment. For example, if a recalcitrant child disturbs the teacher's equilibrium by challenging authority the teacher can scarcely take time to search for causes when the symptom is being so obviously flaunted before the eyes of twenty or thirty other pupils.

Yet there is another view of the picture. The child is misbehaving, but not because of a desire to create a disturbance or because he is innately "ornery." His behavior is a nonverbal way of saying that something is bothering him. Unless something is done to remove or mitigate the fundamental cause, correction of the symptom is at best temporary. Suppressing a child's desire to talk loudly, long, and frequently may only result in his destroying property or picking on other children. Similarly, insisting that the excessively quiet child recite more often and join in

group activities may only force him to retreat further from the group. Permanent improvement in his behavior and attitude will result only from improving his self-confidence and helping him become aware that he has something to contribute. This, as we have seen in many different contexts, is a matter of giving him experience and training in play, work, and social intercourse.

The teacher must study the psychologist's and psychiatrist's view of what constitutes problem behavior. Typically teachers view such behavior as disobedience, fighting, profanity, and masturbation as serious evidences of maladjustment. They are relatively little concerned about shyness, fearfulness, dreaminess—in fact, it is rather comfortable to have quiet, obedient children in class, and they are often regarded as model pupils. On the other hand, child specialists are deeply concerned about shy, recessive behavior and are less disturbed by aggressive manifestations. No doubt the teacher has some justification for his view. Aggressive behavior does upset classroom routine. But to the psychologist, the withdrawn child has been defeated in his battle for recognition and security. He has quit struggling. The modern teacher must realize that such a child also has real problems. It is gratifying to report that this view is on the ascendancy (272).

It is worth noting that when teachers become aware of pupils' problems and seek to find solutions scholastic work improves. In one study, concerning fourth- to sixth-graders, teachers determined needs by using various ability and adjustment tests. Findings were implemented by devoting attention to a few selected students who had learning difficulties. This work resulted in improved learning, better personal adjustment, and greater social acceptability, not only for the few pupils who had received special consideration but for the entire membership of the experimental classes (43).

Experience as a Learning Avenue. All learning is experience, and for the young child that experience should be overt. There are at least three sound reasons for this assertion. (1) As discussed earlier, the child is interested in process. (2) He is not used to sitting for long periods. He has a strong drive toward physical activity, and too much sedentary work bores him. (3) His experience is still too limited to allow him to derive much meaning from verbal abstractions.

These factors provide the base for such teaching procedures as the experience chart in reading and the experience unit in other studies. The experience chart is simply a book that the teacher writes for the pupils—large enough for all to see clearly. The teacher records what the youngsters tell him, in terms of what they have seen, felt, and done and expressed in words the pupils understand. Thus, the youngsters may tell what they saw on a walk through a park or along the streets. Their ex-

perience chart may describe their visit to the school boiler room or the part they played in a fire drill.

The experience unit is a series of lessons centered around some interest or activity which is an integral part of the pupils' lives. "A unit of study is a large area of knowledge, experience, and activity growing spontaneously out of a central theme. Developed through real life situations related to the child's experience and interest, it uses a natural method of learning instead of one produced by artificial stimuli or prescribed by a rigid course of study." [2] Direct experiences do not rule out so-called vicarious, or indirect, experiences. Much time is required for direct experience, and the school day is not sufficiently long to provide many opportunities for first-hand contact. Hence, audio aids should be used as supplements—recordings, radio programs, and brief talks that are related to what the pupils have directly experienced are invaluable in expanding their world. Visual aids, such as motion pictures, filmstrips, models, replicas, and samples, can be used to supplement personal adventures and observation. Transition from the specific and the concrete to the general and the abstract should be gradual. If the teacher attempts to make this important transition too suddenly, enduring antagonisms toward school activities may be engendered. This point is summed up in the following passage.[3]

> The new school has a different approach to the acquisition of information. There is first a conditioning period in which the child becomes acquainted with a subject. He asks questions, seeks information from many sources, and after assembling the facts and thinking them through arrives at the solution of his problems. His research centers around a unit of study *within his comprehension.* What he learns *is related to his own experience;* hence, he associates new facts with those which are familiar to him. Having a desire to find an answer to a question is the first requisite of the modern school. Knowing how to proceed while enjoying the accompanying activities is the second. But the methods used and their effect upon the individual are the essential characteristics which distinguish the new school from the old. Like behavior, learning cannot be acquired by thrusting it upon the unwilling child. Mental activity must be performed by the pupil; he must be eager to do the necessary work attached to the process of acquiring knowledge instead of passively receiving it from his teacher.

Pupil Participation in Planning. There are several good reasons for encouraging pupil participation in planning. Pupil planning makes behavior more purposeful. It capitalizes upon the need for personal involvement in learning and the learning *process.* It gives the child a chance to satisfy his

[2] Rose Schneideman, *Democratic Education in Practice,* New York: Harper & Brothers, 1945, p. 274.

[3] *Ibid.,* p. 11. Italics added.

Such evaluations can serve to make the pupil's academic learning more meaningful. When he keeps his own scores on spelling tests and arithmetic exercises he begins to see that the scores have a personal reference. Graphs of progress drawn by the pupil will motivate him as well as provide a concrete basis for measuring his growth.

Perhaps one of the greatest values of pupil participation in evaluation lies in its influence in improving rapport between home and school. If pupils evaluate themselves in terms of cooperatively determined objectives, then they are not going to go home and report, "Oh, we just played today." They will know what their "play" was for and report their activities in terms of educational objectives that parents will approve.

Ability Grouping. There are many and heated arguments regarding the merits of ability grouping—*i.e.*, placing students in working groups where the range of difference in age, mental age, social development, and/or academic achievement has *to some extent* been reduced. At one time this was called homogeneous grouping, but it is now realized that there are no "identical children."

Some people feel that ability grouping is antidemocratic, while others say that it is democratic because it provides the best chance for each to develop to his potential. Some state that slow learners get inspiration from bright pupils, while others believe that slow learners are unjustifiably discouraged by brilliant classmates. Experiments show that under kindly and sympathetic teachers, who vary their methods and material according to the abilities of their pupils, ability grouping aids both personality development and academic achievement (292, p. 54).

Of course, ability grouping is an expedient. But grouping makes it more likely that a teacher can find the time to work with individuals. Of course, good jobs of teaching have been done by teachers in one-room schools consisting of eight grades. However, this does not prove that even better jobs cannot be done with less wide-range groups. In the final analysis, the most effective teaching will result from knowing individual children, as well as children in general, and applying that knowledge.

SUMMARY

Psychological Principle	*Practical Application*
Children are more likely to be interested in the *process* of doing than in the *product* of doing.	Rather than giving the answers, teachers should find ways to involve pupils in overt activity.
Dependable routines tend to give the young child a feeling of security.	Novelty and variety must be balanced with regularly scheduled activities and routine approaches.
Play is an important learning avenue for children.	Schoolwork should take on such aspects of play as freedom and pleas-

A child's family is a significant part of his psychological orientation.

The teacher should become acquainted with the family by visiting the home, reading reports of other teachers' visits, or talking with the child.

The teacher is a potent psychological factor in the child's world.

Teachers must have or develop healthy personalities and like and understand children.

Psychologists consider recessive traits more serious than aggressive traits.

Teachers need to clarify their concept of problem behavior if the child as a whole is to be considered.

Experience for the young child means feeling, touching, seeing and hearing.

Teachers should enhance all abstractions with many specific examples and illustrations.

Pupil planning tends to make learning increasingly purposeful.

As children progress through school they should increasingly be called on for cooperative planning.

Pupil-teacher evaluation serves to sharpen and objectify goals.

Continuous evaluation should be a responsibility of both pupil and teacher.

Ability grouping tends to lessen the range of differences between pupils.

Teachers must remember that the goal of ability grouping is to teach individuals more effectively.

PROBLEMS AND EXERCISES

1. Does the assertion that children are interested in process deny that their behavior is goal-seeking in nature? Explain.
2. What evidence have you seen that supports or denies the contention that children appreciate routines?
3. Observe a group of first-graders at spontaneous play and report what you believe they either could or do learn in the process.
4. Reflect upon your own past experience and evaluate the statement that children bring their families to school.
5. Draw up a check list of items to help a teacher and his pupils direct attention to the physical condition of their classroom.
6. What are the practical implications of the statement that teachers should give more attention to recessive traits in pupils?
7. Try to find a classroom in which teacher-pupil planning is practiced, observe a class session, and report the specific events which transpire.
8. Have four class members stage a debate on a topic formulated by the entire class which is related to the subject of ability grouping.
9. Do you feel that ability grouping will generate feelings of either superiority or inferiority that will nullify the advantages of reducing the range of differences?

SUGGESTED ADDITIONAL READINGS

Anderson, Harold H., "Mental Hygiene and the Wholesome Growth of the School Child," in Paul A. Witty and C. E. Skinner (eds.), *Mental Hygiene*

in Modern Education, New York: Rinehart & Company, Inc., 1939, pp. 163–183.

This chapter deals with rapport, feelings of security, and individual differences. The bulk of the chapter is devoted to the idea that authoritarianism is detrimental to child development, but that it exists in the home, the school, and the government.

Jenkins, Gladys Gardner, Helen Schacter, and William W. Bauer, *These Are Your Children*, Chicago: Scott, Foresman & Company, 1949, pp. 10–17.

The authors point out that there are basic differences between the orientation of the child and the adult. These must be understood by teachers and parents if growth is to be directed toward desirable objectives.

Olson, Willard C., "Concepts of Child Development in Curriculum and Methods," *Child Development*, Boston: D. C. Heath and Company, 1949, pp. 325–350.

This chapter deals with problems of meaning and the role of experience in study, evaluation, and planning. The maturity of the child, his level of aspiration, the differences between various children, and the role of the teacher are also discussed.

The Psychology of Learning, Forty-first Yearbook of the National Society for the Study of Education, Part II, pp. 445–463, distributed by University of Chicago Press, Chicago, 1942.

In this chapter, G. T. Buswell suggests ways in which the nature of the child and his learning processes provide clues for organization, level, and sequence in the curriculum.

AUDIO-VISUAL MATERIAL

Children Learn by Experience. British Information Services, 30 Rockefeller Plaza, New York 20. (32 min, BW, sd.)

Sequences are devoted to wanting to learn, practicing simple skills, understanding the world, learning at second hand, and learning through play and imagination.

Shyness, McGraw-Hill Book Company, Inc., 330 West 42d St., New York 36. (23 min, BW, sd.)

This film shows how the teacher becomes aware of and approaches three children who tend toward emotional seclusion.

14

THE ADOLESCENT AS A LEARNER

Effective teaching is dependent upon many factors. Knowledge of subject matter, familiarity with appropriate teaching techniques, and a healthy personality are necessary. But there is still another vitally important factor—knowledge of the pupil. This chapter will deal particularly with the problem of a better understanding of the adolescent. Recent research findings will be discussed, and general ways of capitalizing on this information will be suggested.

THE MEANING OF ADOLESCENCE

A Definition of Adolescence. The basic meaning of the term "adolescence" is simply "growth toward maturity." It is the period between puberty and maturity—roughly ages fourteen to twenty-five years for males and about twelve to twenty-one years for females. Yet many books on education and psychology embellish the definition by referring to it as a period of "stress and strain," a time of rapid growth and perplexity, or a period during which the individual is neither one thing nor another. There is just enough truth in each of these concepts to make a sound, constructive understanding of the adolescent difficult. Many people accept these theories without inquiring into their causes or questioning their universality. Fortunately, these views of adolescents are limited views and are not basic and universal phenomena.

Precise knowledge about adolescence is needed by all teachers. The primary teacher needs such knowledge to help pupils develop the attitudes and skills that will prepare them for this phase of growth. The upper elementary teacher needs the information because some of his pupils are entering this phase of development. The high school teacher needs the knowledge so he can work with, rather than against, the basic phenomena of adolescence.

Adolescents Are Not a Unique Breed. One major reason why adolescents are misunderstood stems from the belief that they are a unique breed. Some writers would have us think they are totally unlike children and totally unlike adults. Objective psychology, however, con-

tinues to stress that growth is continuous and gradual. An individual does not suddenly become a different person because the sex organs mature, because the hairline on the forehead alters, because hair grows in the pubic area and under the arms, because the angular lines of the girl change gradually to curves, or because the boy's voice changes. It would be well for all teachers to keep in mind the statement "You are today becoming what tomorrow you will be."

It is also necessary to recognize that while adolescents are not unique as adolescents they are unique as individuals. But this uniqueness is also characteristic of children and adults. Adolescents in the same family are different in size, intelligence, interest, and social personality. Twins are different despite the identity or similarity of their inherited potential. Adolescents from different social classes differ in their attitudes and ideals. Young people from rural districts differ perceptibly from their urban peers. In short, the uniqueness of adolescents lies in their individuality rather than in their adolescence.

Basic Needs of Adolescents. The needs of adolescents are not unique. They, like children and adults, need to love and be loved, to have new experiences, to achieve recognition, to be independent, and to satisfy physical needs for warmth and food. However, some of these needs may be intensified or may take a different direction during adolescence. The adolescent's search for new experiences will take him beyond the school and the neighborhood which were his world as a child. He still needs recognition by parents and teachers, but recognition by his peers now becomes a much more dominating influence. As his body grows to adult size and proportion he asserts his need to be independent more aggressively. This latter need is the cause of some difficulty with *some* adolescents. Parents, who live with the young person continuously, may fail to see this insistent need and consciously or unconsciously hinder its development.

We may conclude that adolescence is a period during which growth trends already established will continue. It is a period during which basic needs are fundamentally the same but will vary in intensity as a result of broadened life experiences and altered influences.

POPULAR MISCONCEPTIONS ABOUT ADOLESCENTS

Many of the current ideas about the nature of adolescence stem from theories that are now being disproved. It has been thought that the onset of puberty marked a unique period in the life of the individual. Current emphases tend to discredit this theory. Actually, fewer changes take place during adolescence than in an equal number of years beginning with birth. There is little or no psychology that is limited to adolescence. The "psychology of adolescence" simply consists of phenomena which can

be studied with profit when dealing with young people. A recent book, which departs from some of the traditional theories, states that adolescence has been highly overdramatized. According to the author, adolescence is not usually a time of stress and it is not a distinctive study. It is a group of developmental problems in which both biology and social forces play a part. To be meaningful, adolescence must be placed in the context of the developmental trends of childhood and studied in terms of maturation and culture (164, pp. 1f.). It is such a view as this that one must take if he is to have a functional understanding of this group of young persons.

Adolescents Are Awkward. It is difficult to determine the origin of this popular misconception. Perhaps it arose from the fact that some adolescents are as large as adults, and because of their size observers expect them to be as graceful and well coordinated as the adult. Generally, they are not so well coordinated as adults. But they are better coordinated than younger individuals. Your own observation will confirm this statement. Adolescents are less stiff when dancing than are their younger schoolmates or siblings, they skate better, they play games with more skill, they fall less frequently. Thus there is little reason to think of this period as "the awkward age." One of the few experimental studies on this matter showed no evidence that awkwardness is caused by rapid growth (73). Such lack of coordination as exists is in *some measure due to the misconception rather than to innate growth factors or tendencies.* That is, the adolescent is *made* awkward by misinformed individuals who allude to "typical awkwardness" when a young person stumbles. Such comments make the adolescent self-conscious and likely to appear more awkward than he really is.

It has been observed that movement and posture are clues to one's personality trends. Feelings of inferiority or inadequacy may be reflected in stooped posture or slinking movement, or in a cocky, swaggering attitude. A healthy, well-adjusted individual will often have poise and graceful, coordinated posture and movement (192, p. 87). These generalizations also apply to adolescents.

Teachers will do a service to adolescents if they display confidence in youth and avoid disparaging remarks. They should help provide them with occasions when they can practice physical skills. Opportunities should be provided for success that will lead to the generation of feelings of confidence. Adults should seek to see the adolescent as an older young person who is not yet an adult. Emphasis must be placed on the growth and progress the youth reveals, not upon what he lacks.

Adolescents Are Inept Socially. No doubt there are adolescents who are lacking in the social skills considered desirable by adult standards. Much of this ineptness is, however, the result of inexperience and self-

consciousness. The educational significance is obvious: Adult standards must not be used for judgment. Opportunities for social experience must be provided for young people. Patience must be exercised with the slowness of growth. Optimism must be based on the continuousness of growth.

There is evidence in the behavior of today's youth that a positive approach bears fruit. When they are given the opportunity to express themselves in class they develop the skill to express themselves publicly. One adult observer came from a city council meeting on the civil rights of Negroes (a problem being studied in the school) and remarked, "I was amazed at the ability of high school youngsters to get up and straightforwardly express a fair and sensible point of view. When I was in school neither my classmates nor I would have thought of such a thing."

Adolescents Are Cantankerous and Negativistic. To the extent that these characteristics exist they are commendable. The facts are that when adolescents are given freedom by parents and teachers to exercise their need for independence they will cease to be resistant and negativistic. Negativistic traits are a healthy indication that the individual wants to become self-directing. The problems involved in this situation are difficult for both the adolescent and his parents. The adolescent justifiably feels that with increasing age and experience he should be allowed more freedom of choice in activities. He wants to choose his clothes and his friends and regulate his schedule. The parent justifiably feels that as long as he is providing food, shelter, and an allowance he has a right to regulate the young person's life. Teachers can help simply by showing the parents and the young person that there is a dilemma. It is by no means a one-sided problem.

Some of the adolescent's negativism stems from the fact that he is seeking *his* purpose in life. This too is a commendable characteristic. Many adolescents, because of background or physical or mental limitations are unable to accept the goals which formal education sets for them. Their negativism is a symptom of their own uncertainty.

Teachers are in a good position to help solve this problem. They should attempt to show the adolescent that his parents are genuinely interested in his welfare. This can be accomplished through counseling procedures and through encouraging adolescents to discuss their parental problems among themselves. Teachers can also help the parents see more clearly the causative factors behind what is viewed by parents as objectionable behavior. Many contemporary periodicals and books are designed to help parents and adolescents better understand themselves and the other.

Of course, a large majority of adolescents do not develop the trait of consistent negativism. Teachers and parents should look for healthy growth patterns and consider these just as characteristic as those which tend to arouse antagonism. This orientation is valid for two reasons. One

is that by and large we tend to see what we look for. The other advantage is that adolescents, as do other persons, tend to do what is expected of them.

Adolescents Are Growing Rapidly. There is some justification for this belief. The pattern of growth in height and weight changes, but typically in preadolescence, ages ten to fourteen, rather than later in the adolescent period. During the period after approximately age fourteen growth is steady and decreases in rate. It should be noted that growth in this period is not nearly so great as growth during the prenatal period nor is it so great proportionally as it is during the first year after birth. Whereas an individual's height has been increasing at, let us say, about 3 inches per year, during the preadolescent growth spurt height increases only 4 or 5 inches. Similarly, weight has been increasing rather steadily at about 5 pounds per year after age two, but typically the growth spurt results in an increase of only 6 or 7 pounds.

Much more important in the psychology of the adolescent is the overall growth rate of the individual. Books on psychology generally include a photograph of three or four boys and girls of the same age (twelve or thirteen years show the most marked difference) (22, p. 33). One of the individuals will be only two-thirds as tall as the tallest and the others will be in between. Their weights will be proportional. Two significant points may be noted. One is that the differences cannot be accounted for by a one- or two-year growth spurt. The differences have been increasing over a number of years. The other is that the problems of adjustment for the individual, if any, stem from the differences in gross size rather than from a period of accelerated growth.

Adolescents Are Bothered by Sex Maturation. Many adolescents are bothered by sex maturation. Boys worry about nocturnal emissions and experimental manipulation of the sex organs. Girls are embarrassed by the development of their breasts and the fact that their clothes reveal their changing outline. They may actually be frightened by their first menstruation. But these reactions generally occur when they are unprepared for the manifestations.

When teachers and parents have given adolescents objective instruction about the meaning and onset of puberty these occurrences will cause less perplexity. They will regard the changes as indications that they are coming into their own as men and women. They are proud of their emergence from childhood. Psychological manifestations of puberty are, to some extent, caused by environment rather than by alterations in endocrine functioning or altered rates of growth. If teachers will, through periodic and long-term study and discussion, develop an objective attitude toward sex they will be in an advantageous position to give substantial help to the adolescent.

Many case studies illustrate the fact that what occurs in childhood is of importance during adolescence. It is the consensus of those who have worked with adolescents charged with sex delinquency that lack of early preparation is a contributing factor (130, p. 76). When, for example, a child's questions about sex are answered frankly and freely he will be well prepared to accept the changes of puberty. If, on the other hand, parents are reluctant to answer such questions, children are likely to develop an abnormal curiosity about what seems to be so secret. Parents have frequently been surprised to find how nonchalantly youngsters accept information that is emotionally very difficult for parents to impart.

Parents and teachers should make it clear that sex is (1) a drive to action and accomplishment in general—not just to sexual gratification, (2) a social urge that attracts men and women and boys and girls, (3) an emotion that involves other emotions, *i.e.*, love, understanding, mutual interests, and loyalty, and (4) a cultural as well as an individual matter (157). Failure to recognize these aspects is likely to cause unnecessary disillusionment and frustration when the adolescent makes errors.

The attitude of adolescents toward sex can be one of healthy concern rather than one of perplexity and embarrassment if the subject is approached and dealt with objectively (92, p. 134). This means that all teachers must deal with questions that arise instead of evading them. Further, it is advisable to organize classes in human relations and family life (151). We should learn to deal with sex in its larger setting rather than set it apart as an isolated phenomena. This dual approach, incidental but frank discussion plus planned and sequential presentation, will do much to keep adolescents from being bothered by their progress toward maturity.

SOME FACTS ABOUT ADOLESCENTS

Growth Progresses Steadily. Changes in the nature of growth occur not only in childhood and adolescence but in maturity and the later years. Some aspects of growth are *predominant* in some periods, but basic needs remain fundamentally the same. It is important that every teacher fully appreciate the continuity of growth.

Lawrence K. Frank states that each individual must pass through life along the same broad highway but that each does so at his own rate. There is an orderliness and regularity in human individuals (97, p. 67). Each period of time in the individual's life is an outcome of what has previously occurred and a preparation for what will happen next. The whole span of life is important. It is foolish to state that any specific period is the most important period. Every period is important, as evidenced by man's lifelong struggle to improve himself and his environment.

Despite the periodic spurts of growth, there are no cataclysmic changes in man's development. This is well illustrated in predelinquent behavior. Before the adolescent engages in sex delinquency, stealing, destruction of property or violent crimes, there are danger signals. The youth typically becomes surly at home and in school, defies convention, and in other ways indicates that he is becoming maladjusted.

Those who understand the symptoms which precede the breaking point can be of great help. It is believed that many shocking crimes might be avoided if attention were devoted to the fulfillment of needs, or to the treatment of personality, when these first symptoms of dangerous tensions occur. Teachers are in a strategic position to aid in the prevention of trouble (277, p. 214). But it is not easy unless the teacher is himself emotionally mature. Predelinquent behavior often takes the form of disliking school, teachers, and principal—it is not confined to academic difficulty (287). It has been said that "when a child is most unlovable he is most in need of love." The same may be said of the adolescent.

It might be well to consider that schools may contribute to delinquent behavior. In a study of 761 delinquents it was found that 40 times as many boys and 75 times as many girls repeated three or more school terms, in comparison with members of the control group. It was also found that the school might be not only a contributing factor but a precipitating factor to delinquency by virtue of the finding that delinquency rates decreased when school was not in session (165). Delinquency is here cited as an example. Commendable manifestations of adolescence have a similar developmental sequence.

Adolescents Are a Minority Group. Youth's minority position is one of the factors that may be said to *cause* adolescence (as contrasted to puberty). There is a possibility that the cultural role of the adolescent is more important in explaining his psychological characteristics than is puberty.

In 1800 life expectancy was a little over thirty-five years. At present it is about sixty-five years.[1] This means that the proportion of adults to young people is becoming greater. Whereas in 1800 over one-half (58 per cent) of the population was under twenty years of age, today only one-third is in the under-twenty age bracket. Forecasts by the Metropolitan Life Insurance Company indicate that by the year 2000 only 25 per cent of the population will be under twenty. The minority position of adolescents is becoming more acute with the passing years. When adolescents made up a large part of the population they necessarily assumed places of importance. They were given jobs outside the home

[1] Life expectancy, at birth, for females is sixty-eight years; for males, sixty-three years.

and were assigned responsibilities in the home. In the days when many parents died at the age of thirty, forty, or fifty it was necessary for adolescents to assume responsibilities at an early age. But today, when parents are able to support their children for longer periods, the period of dependence is prolonged. The minority position becomes one of social burden as well as of statistics.

As a member of a minority group, the adolescent is subject to pressures. He feels that he does not belong, that he is different, and that others view him with suspicion and hostility. These characteristics are found in all minority groups who suffer from unenlightened treatment. The minority position of adolescents makes their struggle for recognition more difficult. There are laws which prevent adolescents from taking jobs, establishing their own families, and taking responsibility for their own actions. These laws and customs undoubtedly have advantages for youth. But it is necessary to realize that many of the difficulties of this age stem from culturally imposed conditions.

Adolescence Is a Cultural Phenomenon. In her studies of culture in Samoa and New Guinea Margaret Mead has brought to our attention the fact that puberty is not necessarily accompanied by the problems which in our country typically characterize adolescence. In those societies, pubertal ceremonies result in the child's formally taking the step from childhood to adulthood. Little stress and strain devolves on the individual as he assumes a mature role in society (186). But the situation is different in our society. The period of dependence is prolonged by extended compulsory education and by child-labor laws. Industrialization in our society has resulted in strong competition, except during periods of war, in the labor market. Laborers protect themselves from the competition of youth by supporting extended compulsory education and sponsoring child-labor laws. These factors intensify the problem of transition from childhood to adulthood.

However, the laws and customs of our complex society can be turned to good advantage. The problems encountered in this phase of development can be solved by recognizing adolescent needs in our culture. More effort must be directed to devising curricula and methods that suit various objectives. For those adolescents who will continue academic work in college, the traditional approach in secondary education will continue to be suitable. But the objectives of education must be accepted *by youth*. Each adolescent must see that methods and curricula meet *his* needs. Vocational emphases are of value but such problems as consumer education, preparation for marriage, functional citizenship, the maintenance of health, and the use of leisure time should receive concerted attention. In 1953 the National Society for the Study of Education devoted an en-

tire volume to a study of such problems (203). The need for this wider emphasis has been tersely stated by the National Association of Secondary-school Principals under the heading "The Ten Imperative Needs of Youth." [2]

1. All youth need to develop salable skills and those understandings and attitudes that make the worker an intelligent and productive participant in economic life. To this end, most youth need supervised work experience as well as education in the skills and knowledge of their occupation.

2. All youth need to develop and maintain good health and physical fitness and mental health.

3. All youth need to understand the rights and duties of the citizen of a democratic society, and to be diligent and competent in the performance of their obligations as members of the community and citizens of the state and nation, and to have an understanding of the nations and peoples of the world.

4. All youth need to understand the significance of the family for the individual and society and the conditions conducive to successful family life.

5. All youth need to know how to purchase and use goods and services intelligently, understanding both the values received by the consumer and the economic consequences of their acts.

6. All youth need to understand the methods of science, the influence of science on human life, and the main scientific facts concerning the nature of the world and of man.

7. All youth need opportunities to develop their capacities to appreciate beauty, in literature, art, music, and nature.

8. All youth need to be able to use their leisure time well and to budget it wisely, balancing activities that yield satisfactions to the individual with those that are socially useful.

9. All youth need to develop respect for other persons, to grow in their insight into ethical values and principles, to be able to live and work cooperatively with others, and to grow in the moral and spiritual values of life.

10. All youth need to grow in their ability to think rationally, to express their thoughts clearly, and to read and listen with understanding.

If the thesis is accepted that adolescence is, in part, a cultural phenomenon, then it is obvious that the school alone cannot solve the problem. However, the school can enlist the aid and support of other community organizations. Business and industry can, and does in some communities, help to solve the problems of youth by cooperating in "school-work projects." This is a plan whereby the pupil's work in the school is coordinated with on-the-job training experience (8). Citizen's advisory

[2] *Planning for American Youth*, rev. ed., Washington: National Association of Secondary-school Principals, National Education Association, 1951, p. 9.

councils have been formed to study ways of meeting the needs of youth in community and leisure-time activities. Youth councils, in which youth are encouraged to find the answers to their own problems, have been found effective. Park bureaus, city planning commissions, juvenile correctional authorities, and public health departments all have a part to play that should be correlated with the work of the school. Many communities have comprehensive programs of this type in operation.

The school is in an advantageous position to coordinate the resources of the community. It is an institution which is present in every community. It has the largest resources in staff, equipment, and property of any agency. Through the pupils, the school has a close and useful contact with parents. In view of the rapidly expanding enrollments and the imminent shortage of high school teachers and buildings (the full impact of this shortage will be felt in 1961) (86), anything that is to be done will have to be done soon. The time is right for the secondary school to go beyond the traditional bounds of subject-matter instruction and begin to meet the needs of youth.

Individual teachers will probably have to supply the initial leadership for this forward step. By virtue of their educational opportunity, they can learn about the psychological factors in adolescence that are of maximum importance. They have an even better chance than parents to discover the environmental problems which disturb adolescents. Basically, as previously emphasized, the needs of youth are the same as in other phases of development. Teachers must learn how to work in harmony with these needs *through the existing culture.*

SOME EDUCATIONAL IMPLICATIONS OF ADOLESCENCE

Youth Needs a Purpose. It has been shown that competition on the labor market, sentiment against early marriage, and extended education have served to prolong the period between the achievement of physical maturity and the achievement of functional maturity. Much of the feeling of uselessness which adolescents sometimes develop can be avoided if they can be given responsibilities which they feel are important. This was clearly demonstrated during the Second World War, when youth suddenly found there was a job for them to do. They became important in the eyes of the adults of the nation. But the fact of most significance was that they recognized their importance. They efficiently took up the tasks which were assigned to them. Many of them grumbled about the interruption of their educational plans or their plans to go to work and to get married. But few of them were so dissatisfied that they failed to perform the functions which were assigned to them. The number who

caused difficulty in the armed services was substantially smaller than the number who, in what is called ordinary times, become delinquent.[a] Of course, war is no solution to the problems of youth, nor is military service the only way to absorb their services. The point is that, given a purpose, some of the perplexity of youth disappears.

Some of this purpose can be supplied by the school. Revisions of the curriculum that recognize varying backgrounds, abilities, and ambitions of youth will be a step forward. Such matters as leisure-time pursuits, boy-girl relationships, family life, relationships with adults, community services, part-time employment, and consumer economics are other problems of basic importance.

Youth's need for purpose can also be fulfilled by other agencies. Parents must come to recognize the necessity for a progressive unloosening of the apron strings. Business and industry must come to realize that their participation in school-work programs is an economic advantage as well as a social service. Churches can institute programs that will be of aid in the daily life and problems of youth. And in all of this the participation and counsel of youth themselves should be enlisted.

Youths Need Freedom for Self-direction. Many good programs have failed before they were begun because they were planned and organized by "experts" and imposed upon youth. Autonomy is as important to adolescents as it is to adults. In the field of education, guidance programs, curriculum revisions, and improved grading techniques have failed, not because they were faulty but because they were imposed on youth.

A first step in developing the ability for self-direction is to provide youth opportunity to discuss their problems. The formation of youth forums is an example of such methods. The Y.M.C.A., the Y.W.C.A., and other youth organizations have also been active in this field. Some communities have encouraged adolescents to plan and build their own youth facilities. In those communities youth quickly gained respect for property rights. Evelyn Duvall points out that churches which enlist the participation of youngsters in choirs, fund raising, and other programs geared to their needs, find youth becoming more reverent. Stores in which friendliness is shown and in which permissive service is characteristic have no difficulty with their youthful customers. The school could profit from these experiences by seeking opportunities for its students to exercise self-direction.

[a] There was an increase in reported delinquency during the war years, but this was due to increased attention devoted to delinquency and the increased perplexity of those youth who were left behind. A great proportion of delinquency was found among those who were less than sixteen years old—below age for military service.

It must be realized that ability in self-direction will grow with practice and that youths' decisions will not always accord with the adult view. We too, in our adolescent years, were viewed with an element of distrust and disdain by our elders. We too found ourselves at odds with some of the requirements imposed upon us. We should not consider the specific issues alone but should examine the basic orientations and needs. Teachers and parents need to realize the pervasiveness of the antithesis of self-direction—authoritarianism—in our society and seek its reduction. The probability is that youth are much more capable of self-direction than some parents and teachers think.

Youth Needs the Help of Understanding Adults. Growth is characterized by both progressions and regressions. An ability that is manifested on one day seems often to have disappeared by the following day. The young person will staunchly defend his right to make his own decisions at one moment, only to request advice and counsel the next. "Please give me credit for knowing when to come in at night," is soon followed by "Do you think I should wear a white or a colored shirt?" Wise parents have learned to be patient with this apparent inconsistency. Many teachers know when to avoid dogmatism and when to speak with certainty and conviction.

The youth wants to outgrow adult domination, particularly parental domination. Since the other adult with whom he is best acquainted is his teacher, in the attempt to shed parental domination he turns to the teacher. Should the teacher assume a substitute parent role (*i.e.*, by being dogmatic and authoritarian) and thereby fail the youth, the young person has no adult to whom he can turn in his need for mature counsel. If, on the other hand, the teacher will listen, talk *with* the youth, and act as a coworker, the youth will consider the adult view of problems.[4]

Youths Need to Know That They Are Like Others. As the world of the adolescent grows beyond the immediate family to include other persons, his need to identify himself with, and be like, his peers increases. But different rates of growth and varied inherent potentials result in an increasing differentiation of individuals. Bodily builds differ, puberty begins at various ages, diverse family and cultural backgrounds become increasingly apparent, and different interests develop. Therefore, since the youth desires to be like his peers, uncertainty about himself grows.

[4] It is worthwhile for the teacher to ascertain the adolescent's attitude toward his parents before calling for parental assistance. In some cases a great deal can be gained by avoiding contact with parents. This idea runs counter to the advice most frequently given, but it does work in many instances. The youth and the teacher can work out approaches to difficult problems; but when the parent is called in, some youth feel that the teacher is in league against them with their parents.

The counsel of adults can be of some help. But probably the young person's greatest help in accepting individual differences will come from discussions with other adolescents. One youth bemoans the fact that he has moles on his face, has bowed legs, or is short or tall. Another reveals his unhappiness about his unsightly acne, his inability to buy clothes similar to others', his difficulties with his parents, and his dissatisfaction with school. As these problems are discussed each comes to realize that his feeling of difference is shared by others of his age group—even though the feelings are generated by different problems.

"It seems probable that, if adolescents and youth could in some way be made to understand that the kinds of experiences they are having—of inferiority, of insecurity, in peer-group social relations, etc.—are common to all, they would take them less seriously and weigh them in proportions." [5]

The School and Social Pressures. The adolescent is much concerned about *his* conception of the group's desires. Therefore, ways should be provided for him to determine the group desires. Teachers should help him avoid the error of accepting the opinion of an aggressive or vociferous minority by encouraging frank discussion. Moreover, adults must recognize the importance to the adolescent of being able to dress like his peers, to have similar freedom, to act in the current mode, and to be with the gang.

Behavior patterns and ideals differ in various social classes. Teachers must realize that it is not an inborn tendency which makes the adolescent question or even spurn their counsel. When he disagrees, it simply indicates that his background has been pointing in another direction. He may not see the value of continued education. His concept of what is moral or immoral, ethical or unethical may differ from that of the teacher. Good rapport with adolescents is partially contingent upon our recognizing and respecting these differences.

The teacher who desires to influence the conduct of the adolescent must exemplify the behavior, attitudes, and ideals which he would have the young person emulate. There is no choice in this matter. Whether we wish it or not, our conduct does influence that of the adolescent. One of the most difficult problems we have to face in this area is that all too frequently the adolescent has not had an adult who helped him to establish a high goal. Teachers can help adolescents resolve the perplexities of their culture and time by showing firm convictions, expressing high ideals, and behaving in an exemplary manner.

[5] Paul H. Landis, *Adolescence and Youth*, 2d ed., New York: McGraw-Hill Book Company, Inc., 1952, p. 377.

SUMMARY

Psychological Principle	*Practical Application*
Adolescence means simply growth toward maturity.	Teachers must approach their work with confidence in the continuity of growth.
Adolescents do not suddenly become problems to themselves and others.	Understanding the adolescent demands a knowledge of causative factors.
Basic needs of adolescents are different only in degree from those of all other human beings.	Needs for security, independence, recognition, and the like must be met through suitable curricula and methods.
Adolescents are not awkward by virtue of rapid physical growth.	Adolescents should be spared the embarrassment of ill-conceived remarks.
Adolescents are not socially inept because of innate factors.	Provision should be made for social experience and independent exploration.
Adolescents are not basically cantankerous and negativistic.	Negative personality characteristics can be avoided by meeting basic needs.
Not all adolescents are bothered by sex maturation.	The culture and attitude of adults must be recognized in sex education.
Growth for adolescents, as for all other persons, progresses slowly.	Teachers must watch for evidences of growth.
Adolescents are a minority group.	Adults must recognize the necessity of adapting culture to the adolescent.
Adolescence is a cultural as well as a biological phenomenon.	We must recognize the pressures which society places on the growing person.
Having a purpose makes for economy of action.	Youths need direction in seeing and accepting worthwhile goals.
Ability for self-direction is an aspect of maturing.	Opportunity for discussion and experience should be planned *with* youth.
Youth imitate and absorb the conduct and attitudes of adults.	Teachers should think of themselves as models for youth.

PROBLEMS AND EXERCISES

1. Does it seem to you that the definition of adolescence as simply a period of growth is sufficiently inclusive?
2. What phases of growth or what temporarily insistent needs of young persons tend to make them quite different from other individuals?
3. What is your opinion of the so-called misconceptions about adolescents; namely that they are awkward, socially inept, negativistic, and unduly concerned about sex development?
4. Discuss with your classmates the approaches to sex education that you have found to be most constructive.

5. Cite reasons for your agreement or disagreement with the thesis that adolescence is a cultural phenomenon.

6. What are some existing school practices which deny or provide opportunities for self-direction?

7. What skills, knowledge, and personal characteristics do you feel would be most significant for teachers of adolescents?

8. Comment on the contention that there should be no parent-teacher organization at the high school level.

9. If possible, talk with some youth counselor in a Y.M.C.A. or Jewish center and get his view of the ability of youth to accept responsibility.

10. Assume that you are a counselor of youth. What could you say to a young person to help him realize that his problems are quite similar to those of other adolescents?

11. What, if any, experiences have you had which indicate that the attitudes and ideals of youth from different social classes vary from those which have been operative in your own life?

SUGGESTED ADDITIONAL READINGS

Adapting the Secondary-school Program to the Needs of Youth, Fifty-second Yearbook of the National Society for the Study of Education, Part I, distributed by University of Chicago Press, Chicago, 1953.

Any of the chapters would be helpful and pertinent. Especially recommended are I, "Introduction: The Youth-needs Motive in Secondary Education"; XII, "Translating Youth Needs into Teaching Goals"; XV, "Education of Teachers to Meet the Needs of Youth"; and XVI, "Characteristics of a Secondary School Meeting the Needs of Youth."

Bigelow, Maurice A., *Adolescence, Educational and Hygienic Problems* (National Health Series), New York: Funk & Wagnalls Company, 1937.

This little book deals with the physical and physiological developments that influence the individual's development during adolescence. Suggestions for the school in dealing with crushes, boy-girl relationships, and general social adjustment are discussed in the light of other growth factors.

Blair, Arthur Witt, and William H. Burton, "The Preadolescent Is Subjected to Strong Cultural Impositions," *Growth and Development of the Preadolescent*, New York: Appleton-Century-Crofts, Inc., 1951, pp. 103–136.

All chapters have pertinence to the subject at hand; but this chapter deals with the impact of social classes with a clarity not found in most other books dealing with adolescents.

Landis, Paul H., "Forces in the Social Structure Creating the Adolescent-youth Problem," *Adolescence and Youth*, 2d ed., New York: McGraw-Hill Book Company, Inc., 1952, pp. 51–72.

This chapter deals with the impact of the shift from an agricultural to an industrial society. The writer convincingly presents evidence to show that some of the perplexity of youth is thrust upon them by society.

AUDIO-VISUAL MATERIAL

Act Your Age, Coronet Films, 65 East South Water, Chicago 1. (18 min, BW or C, sd.)

An appeal to high school-age youngsters to progress from childish behavior patterns to more mature reactions. Flashbacks to earlier responses reveal similarities and contrasts of mature and immature actions.

Problem of Pupil Adjustment, Part II, The Stay-in, McGraw-Hill Book Company, Inc., 330 West 42d St., New York 36. (19 min, BW, sd.)

Shows a school program where individual needs are met. Classes in poultry raising, driving, and academic subjects are taught in terms of pupil experience and need.

PART FOUR

IMPROVING THE TEACHING-LEARNING SITUATION

LEARNING IS subject to the principle of multiple causation. Part IV presents more details of the teaching-learning situation in terms of the teacher, the pupil, and the learning process. It is felt that the chapter on Cultural Influences is particularly important—meriting careful study of the suggested additional readings—because this area has been largely neglected. Teachers need to understand emotional responses, habit formation, and language development, as well as social class structure, if their pupils are to develop most effectively. The chapter on *Mental Hygiene* shows the interrelations between the pupil, the physical environment, and the teacher. The book concludes with suggested future steps in education, among them the possibilities of *applying our knowledge of psychology to the* evaluation of teachers and pupils so that both will continue to grow.

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FACTORS WHICH FACILITATE LEARNING

AN INDIVIDUAL always takes what he perceives to be the shortest route to a goal. For countless generations people have sought easier ways to do things. This is a fortunate condition for learning, the more fortunate because it does not have to be learned. It is wise to seek easier ways to do and to learn. But you should realize that all methods now known require *some* effort. This chapter describes means of facilitating learning (many of which are mentioned elsewhere in the book), but even the most effective methods will require individual activity and responsibility.

IMPROVING LEARNING TECHNIQUES

Some of the techniques for facilitating learning can be utilized by the pupil without the aid of the teacher. These will be treated in this section.

Distributed Effort. Experiment after experiment demonstrates that more is learned in the total time devoted to learning when the periods of study or practice are spaced rather than massed (226). An hour every other day spent on the study of educational psychology for ten weeks will result in more thorough and permanent learning than will thirty-five hours of study in the last three days of the term. One-half hour a day for two weeks will result in more progress in learning to play a musical instrument than will seven hours of practice on one day.

There are several explanations for the advantageousness of spaced practice or distributed effort.

1. Attention fluctuates. It is easier to stick to the job at hand for short periods than for long periods. Long periods of study do not necessarily mean continued mental concentration.

2. Jost's law states that for associations of equal strength but of different age further practice strengthens the older rather than the more recent. Thus, going back to a subject studied a week ago is better than restudying that subject immediately.

3. Incorrect associations are forgotten more quickly than correct ones. Hence, spaced practice allows incorrect responses to be dropped from the material learned.

4. There is a tendency on the part of the organism to resist early repetition of an act. Resistance is built up as effort continues. Hence, the attempt to perform the same act repeatedly within a short space opposes a natural tendency. The organism requires rest.

Some precautions should be taken in spaced activity. Too rapid a succession of events may be harmful. If a new activity intervenes too promptly, consolidation of learning will be less likely. Therefore, study periods should be short enough to avoid fatigue and long enough to allow an idea to "jell."

The question is often raised, "How short or how long should study or practice periods be?" To a certain extent the answer depends on the individual and on the conditions. Obviously, if periods are too short so much time is wasted in getting started—time is required for warming up—that comparatively little time is devoted to the actual task. Further, the more mature the individual the more capable he is of prolonged work. A concert pianist would be unlikely to adopt fifteen-minute practice periods. The kind of material being learned constitutes another variable. For schoolwork in the elementary grades, fifteen- or twenty-minute periods are found to be advantageous. College students can profit from one-hour periods devoted to one type of activity. High school pupils are found to profit from periods somewhere between these two extremes. Incidentally, it has been found that for industrial workers doing skilled jobs rest periods every one or two hours seem to increase productiveness for the total working day (110, p. 498).

Providing for Distributed Effort. The traditional arrangement of the school day into periods makes distributed effort feasible. However, the idea of distributed effort does not mean that effort is not continued in the same task or in the same direction. For example, one way of providing for distributed effort is to show how the lesson for today builds upon yesterday's. In memorization work, the teacher should tell the pupils the importance of distributed effort and give them practice in applying the principle by spending a few minutes each day in recitation.

Since one justification for distributed effort is the fluctuation of interest, it will be well to plan the lesson so there is variety in application to the task at hand. For example, instead of having the class do algebra problems from the book for the entire period, the teacher might spend only a part of the time working problems, devote some time to reviewing general principles or rules, and give part of the time to applications to problems taken from daily experiences and some of it to reviewing problems that were studied a week or two weeks ago.

Distributed effort is particularly advantageous in learning routine skills, such as typewriting and shorthand. Teachers of these subjects should provide for drill, it is true, but an effort must be made to see that the practice periods are short enough to encourage sustained effort. The criticism of massed practice, that boredom causes needless errors, is good reason for conscientiously applying distributed effort.

The spacing of tests influences the distribution of effort. Frequent tests are likely to lead to distributed effort, while only a final test or a midterm and a final will stimulate some pupils to attempt to learn by cramming. There are situations in which cramming is justifiable. Lawyers "cram" to get the facts and find the laws which are particularly pertinent to a given case. Similarly, students preparing to make a special report which is supplementary to the basic material of the course may find cramming justifiable.

Overlearning. If learning is defined as the ability to perform an act, repeat a list of words, or recite a verse once, then overlearning can be defined as additional practice after learning has been completed. Experimental results show that overlearning results in better retention and that more is retained for longer periods of time as the result of overlearning than if practice ceases at the point of initial learning. If multiplication tables can be learned from twenty repetitions, then thirty repetitions will make it more likely that the learner can say the combinations after a week of no additional practice.

The advantageousness of overlearning depends on the thoroughness of the initial learning. The skills of swimming or skating are not readily forgotten because practice usually continues after acquisition of the skill. In academic subjects overlearning gives the law of exercise an opportunity to operate.

The gain from overlearning decreases as additional practice increases: 100 to 200 per cent overlearning is better than 50 per cent overlearning, but the additional gain is not proportional to the extended effort (163). It is therefore recommended that overlearning be confined to from half to double the number of repetitions required for original learning. However, it is worth noting that overlearning need not consist of mere rote repetition. Overlearning can also be effected by reviewing materials just read (but not complete rereading), reciting to oneself, placing the material in a new context, or reading similar materials in another text.

Encouraging the Practice of Overlearning. All pupils from the intermediate grades up should understand the principle of overlearning and take responsibility for applying it. In the primary grades overlearning is employed through drill, repetition, and review. In the upper grades too little attention is paid to overlearning. As soon as pupils are given assignments which are to be prepared ahead of time they should be encouraged

to review immediately the work they have just completed. Teachers can stress overlearning by presenting the material in a new context, using illustrations, making applications, holding class discussions, and encouraging pupils to bring materials previously studied to bear upon current projects.

Whole Learning and Part Learning. When one sets out to memorize a long poem or prose passage by reading and rereading the entire selection until it is memorized, he is employing the whole-learning method. If he learns the passage verse by verse or paragraph by paragraph, he is using the part-learning method. In general, memorizing is facilitated by the whole method. For example, let us assume that we are trying to learn four stanzas of four lines each. If the part method is used the end of line four is most closely associated with the beginning of line one; the fourth line of verse two is more closely associated with the first line of verse two; etc. Perhaps you may recall a time when in attempting to recite a poem you had this experience. When you finished the second verse you started immediately to repeat the verse instead of going on to the third. On the other hand, if the whole method is used the end of the first verse is properly associated with the first line of the second verse.

Actually, the problem is probably best solved not by a choice of one method or the other but by a combination of the two. The teacher may start by helping the student gain insight into the meaning of the entire selection or task (149). As the whole is attacked, some phases will be found to be more difficult than others. These may be learned as parts, then each part put into its total context. Progress by this method may seem to be slower, but actual experimentation indicates a saving in total time.

Circumstances which will determine the choice of whole or part methods are as follows:

1. The whole method is more advantageous with meaningful material. Understanding of the entire unit favors the use of the whole method.

2. The more intelligent the individual the greater the likelihood that he will profit from the whole method. Slow learners will tend to make better progress with the part method—actually, the *understandable* whole unit is smaller for them.

3. Learning is dependent to an extent upon the size of the unit which is to be mastered. For example, one would not set out to memorize an entire book by the whole method.

Experimental studies of the relative advantages of whole or part methods point to some tentative conclusions. Learning in the later stages may profit from the part method—for example, one might devote special attention to certain verses in a poem being memorized. While meaningful material lends itself better to the whole method it must be remembered

that parts of a whole may also be meaningful (69, pp. 242f.). As the nature of the learning task becomes more logical and better organized, the whole method should be favored.

Capitalizing on Whole and Part Learnings. If one accepts the thesis that understanding is primary in learning, then the merit of whole learnings must be stressed. Part learning, or the fragmented approach, is subject to criticism if comprehension is a primary consideration. The practical import of whole learning is that teachers should try to give their pupils some preliminary comprehension of the entire unit of learning. They may describe the scope of problems to be studied, indicate some of the difficulties likely to be encountered, and preview the material that will be studied. The author encourages his students in educational psychology to read completely through some text in educational psychology within the first two weeks of the course. This rapid overview of the course enables them to anticipate problems, grasp relationships, and perceive objectives more clearly.

Obviously it is not possible to comprehend the whole on the first day of a subject. It would be no more possible to understand the whole of arithmetic than it would be to sit down and play "America" on a clarinet the first time one took the instrument in his hands. Parts or elements have their place; but the end objective should be at least vaguely understood by the learner. The role and function of arithmetic should be explained in the clearest possible terms in view of the pupil's present status, just as the possibility of playing "America" is held before the beginning clarinetist.

Devices for presenting the whole are motion pictures, illustrative stories, broad outlines of the areas to be covered, and a general preview of the material. At the end of the unit the teacher can tie together what has been studied through a review or a summary. A fundamental approach to studying the whole is to utilize all academic subject-matter divisions to solve problems. This approach is implemented by the use of units, problems, and projects. Such an approach is sometimes criticized because there is felt to be a danger that pupils will miss some of the important fundamentals. Planning on the part of the teacher can avert this danger, and in the meantime he can see that subject matter is presented in terms of the natural interrelationships which must later characterize its functional use.

A practical problem which is related to the whole-part procedure has to do with school organization. Schools dominated by the subject-matter viewpoint are likely to have one period devoted to language, one to arithmetic, one to spelling, etc. This breaks the day into too many short periods. High school is dominated by this procedure to an even greater extent than is the elementary school, but resistance is shown in the grow-

ing popularity of the "double period." The larger units of time allow for field trips, excursions to museums, or the viewing and discussion of a motion picture.

Recitation. "Recitation" means to recite, to tell again, to repeat, or to rehearse particulars. It commonly refers to an audible process, but the meaning need not be so restricted. Recitation can also be subvocal. If one attempts to restate to himself what he has just read in a chapter he is employing self-recitation. Both have been found to be advantageous in retaining material.

Recitation possesses a great learning advantage for several reasons.

1. The learner uses the cues for remembering that will be employed at a later time.
2. He discovers immediately the most difficult portions of the lesson and applies his time and effort accordingly.
3. He is immediately aware of the degree of success being achieved; hence there is immediate motivation.
4. He is employing the principle of exercise: he is using the material before a time lapse causes forgetting.
5. Either in or out of school he will use the material in some kind of recitation; therefore, he is learning the material as it will be used.

Too much emphasis cannot be placed on the importance of activity in the learning process. Speed, precision, and permanence of learning will be enhanced in proportion to the amount of activity aroused in the process. This implies that the individual must be active in as many ways as possible. The learning task must challenge his interest and elicit his cooperation. Reading, listening, and seeing are all helpful forms of action; but recitation is more direct and overt.

Recitation can and should mean more than simple restatement. It should mean placing the material in a different setting, applying it in a new situation, viewing it in another perspective. Thus, as one recites a history or psychology lesson he should plan to make applications of the lesson. He should try to see the material in relation to contemporary and personal problems. The study exercises placed at the end of the chapters in many textbooks may require additional time, but in terms of total learning achievement the amount of time required is small in comparison to the proven advantage in learning. The real question is not whether you have time to recite but whether you can afford *not to take the time* needed for self-activity in learning.

The Wise Use of Recitation. Recitation is widely used in schools and therefore should be examined psychologically. It has been seen that children learn what they do. Too often recitation consists of giving back isolated and comparatively meaningless facts which the pupil has gleaned from a book. Memorization may be a form of learning if only *changed*

response is implied by the term "learning," but not necessarily so if learning implies *improved* response. Yet teachers have been known to criticize a pupil's recitation because it was not in accord with the words printed in the book. For example a pupil responded to the question, "What is the flying time from Seattle to Alaska?" with the answer, "From two to ten hours." The teacher marked his answer incorrect because the text said it was five hours and made no inquiry about the variation in the boy's answer, although it is conceivable that he was entirely correct, since the answer would depend upon whether the flight was from Seattle to Anchorage or Portland to Nome and whether by jet plane or commercial airliner.

Recitation, then, should consist of more than rote repetition. It should mean the *reuse* of information in new contexts. Those teachers who use the discussion or conversational method as a means for further developing a topic that has previously been studied are employing recitation in its more profitable form. Problem solving tends to minimize the acquisition of facts for the sake of answering the teacher's questions and to emphasize the functional use of knowledge. Some of the advantages of such an approach include the following:

1. Material is used in a manner similar to the way it will be used at a later time.
2. The method stresses pupil activity at the level of interpretation rather than of rote repetition.
3. The method tends to encourage pupil initiative and resourcefulness.
4. Training is provided in expressing personal ideas.
5. The method will help pupils avoid an attitude of blind worship of the printed word.

Much depends on the teacher if the foregoing advantages are to accrue from recitation. The work must be planned with a degree of flexibility that will allow pupils to exercise some freedom. Teacher guidance must be exercised to see that the discussion is constantly directed to the problem at hand, but pupils should be led to participate in the planning of the discussion. Care must be taken to see that all members of the group are given an opportunity to participate; otherwise aggressive pupils may monopolize the discussion.

One of the greatest handicaps to realizing the full potential of the procedures of recitation recommended here is what we might call the "teacher's complex." In the present context, this refers to the teacher's attitude that the question has not really been answered unless it has been answered in terms that the teacher has previously had in mind. This does not mean that the teacher should not be well informed; rather, pupils must be kept from developing the attitude that there is little use in answering questions because the final word will reside with the teacher.

Active Recall. Active recall as a principle of economic learning is a form of recitation in which more personal responsibility is placed on the learner. Active recall means to remember or reconstruct the material without the use of cues. If you were to attempt to remember the material in this chapter by referring to paragraph headings you would be using recitation but not active recall. If, however, you tried to remember the material with the book closed, recalling as many of the paragraph headings as possible without the use of clues, you would be using active recall. Matching and multiple-response type questions are known as recognition items. They are relatively easier than are completion-type questions which demand active recall.

Experimental studies reveal that for both nonsense and meaningful materials learning is increased in proportion to the amount of active recall used in learning. The reasons are obvious. Active recall allows one to detect errors and to determine the difficult portions. It gives practice in the manner in which the material is most likely to be used. It gives an opportunity for the learner to insert himself, his background experiences, into the situation as learning proceeds.

The approach to study will be different when the student intends to utilize active recall. He will be noting headings, important emphases, and illustrative materials. The inevitable consequence is more effective learning. If, on the other hand, one reads materials merely to get to the end of the chapter or assignment, the belated attempt to recall will be less advantageous. In short, the habitual use of active recall is profitable in that it reinforces the intent to learn. The mediocrity of many high school and college students can be attributed at least partially to their habitual neglect of the application of active recall.

Implementing Active Recall. The principle of active recall can be implemented by using methods which encourage the pupil to become more vigorous in the learning process. The whole emphasis in active recall is concerned with making learning more than a passive process. Pupils should be encouraged to recall the information just read. They should be asked to apply what they have previously learned to some current problem. Such questions as, "What have we studied that is similar to this?" "How does this relate to our lesson of last week?" "What previous data have we encountered on this topic?" encourage the use of active recall. Pupils should realize that the few extra minutes involved will mean more permanent learning.

Applications. A good deal of the criticism of so-called "traditional education" stems from the fact that seemingly little attention is devoted to making applications. In traditional education, according to its critics, "Facts are isolated. Materials are far removed from the experience of the pupils. Learning consists of acquiring and giving back the conclusions

stated in a textbook." These criticisms need not and should not be valid. The value of making applications can be firmly rooted in one's educational philosophy (243). Nevertheless, there are psychological justifications for a studied attempt to make applications.

1. The making of applications gives the learner something to which to tie his information. The principle of learning by association is thereby utilized.

2. Directed learning is purportedly designed to solve problems. Hence, the making of applications encourages learning as it will be used—the information is made functional.

3. If applications are demanded, teaching must necessarily attach the new to the old—the pupil's background of experience is called upon.

Studies of recall in learning show that a greater amount is remembered when application is involved. Teachers of English encourage the writing of sentences and themes that call for the application of rules of grammar. Teachers of mathematics attempt to show how rules and theorems are used in the solution of problems. Teachers of science show how the facts are applied in laboratories and in industry. Unfortunately, in many instances application is neglected. Too often social-studies teachers confine their teaching to the materials in the text, and some even regard students' questions as impertinent. Obviously, it would be advantageous to study civics by dealing with problems currently being faced by the community in which the pupils reside. Problems of delinquency and indigency might well be studied by analyzing social and economic conditions in the local area. After the rules or principles of a subject are applied, additional problems should be presented to give more practice in making applications.

Making Applications in the Classroom. The criticism of artificial learning has been made so frequently that teachers are becoming well aware of the necessity for encouraging students to make applications. Here, again, it is necessary to devote time to the study of pupils' needs. When schoolwork meets those needs students will be encouraged to make applications. Problems are problems only when the individual pupils accept them as such (71, p. 15).

Learning Requires Activity. Distributed effort, overlearning, memorization, active recall and the making of applications stress the importance of activity. Two points warrant further discussion. First, there are varying degrees of activity. Listening to a lecture is an activity, but listening, reciting, and discussing involve more activity. Second, activity does not necessarily involve muscular movement. One can be mentally active as well. Listening may be a passive process, or it may involve acceptance or repudiation of the idea presented—even though the individual does not vocalize his reaction.

Learning does not come to a dead stop in even the poorest school. The pupil will learn something—if it is just the habit of sitting, standing, or marching at a given signal. The point is that some activities are more educational than others. When meaning, purpose, self-identity, usefulness, and significance are a part of learning activities we shall have schools which contribute maximally to the over-all object of education, *i.e.*, more harmonious adjustment to the many problems an individual faces.

Insight is a most important aspect of the foregoing learning processes. Distributed effort is less effective when understanding is lacking. The advantages of overlearning will be more quickly lost if there is no comprehension of what is learned. Many children of preschool age have learned to count to 10 or 20 without comprehending what they are doing. The counting is a mere verbalization—not a means of evaluating quantity. When insight is lacking learning is superficial. There is a twofold advantage in learning which is accompanied by insight. First, learning will take place more rapidly than it will through the processes of trial and error. Second, learning is likely to be permanent because insight brings comprehension of relationships.

The learner can capitalize upon insight in several ways. First, he must get the objective clearly in mind by asking himself such questions as, "What am I trying to accomplish?" "What is the value of this material?" "What is the nature of the information?" "How can the knowledge or skill be used?" "Is it similar to anything I have experienced before?" "What would be an advantageous method of attack?"

Second, the learner should preview the material. Pupils should be encouraged to glance over the paragraph headings before thoroughly studying a chapter or look over the entire task before attempting to accomplish it. For example, if one were working a wire puzzle it might pay to look it over and try to formulate an approach rather than to begin immediately to manipulate the object. The author knows a mine mechanic who, when sent to do a repair job, habitually sits and looks for a few minutes at the machine to be repaired. He asks a few questions of the operator of the machine before beginning the job of dissembling. He has the reputation of doing the jobs more rapidly and thoroughly than those who immediately begin their work.

Third, the learner should be sure that antecedent elements or fundamentals have been mastered. One cannot translate Latin passages without a Latin vocabulary. He cannot solve an algebra problem without a knowledge of arithmetical combinations, nor can he master history or psychology without the ability to read. Learning depends on the background.

Another extremely important factor in achieving insight is intelligence. Because the individual learner is able to do little about his in-

telligence, it is important for the teacher and for the student to realize when the task is so difficult that pursuit of it is relatively fruitless. Here is seen the basis for the frequently reiterated statement that schoolwork must be appropriate to the developmental level of the individual (182, p. 9).

Recognizing the Need for Activity in Effective Learning. When we say that the pupil should be active in the learning process, we mean that there should be a large degree of involvement of the child's total personality. Greater pupil activity may be achieved by pupil participation in planning the curriculum. Discussion or conversational methods are means of implementing pupil activity. The experience unit (see page 252) is increasingly being used to add meaningfulness and activity to learning. Whether the teacher adopts the unit approach or the subject-matter approach he can expand pupil activity through field trips, excursions, and visits to courts and legislative bodies or businesses and industries. One high school class vitalized its study of government by placing their teacher's name on the primary ballot for mayor and campaigning for him. They succeeded in getting him into the final election, and although another candidate won the election the teacher candidate received more votes than did the incumbent mayor who was running for reelection. Said the teacher, "It was a case of put up or shut up. But both the students and I learned a lot about the politics that function in a democracy." There can be no doubt that this participation in affairs of the city was a genuinely educative experience.

Projects which involve construction (playgrounds, recreation centers, and parks) have been formed to make pupils more active (114). Some subjects such as science and art readily lend themselves to pupil activity. Many teachers choose to correlate these activities with the more strictly academic subjects as a means of increasing pupil activity. This correlation suggests that the degree of pupil activity is largely a matter of teacher initiative and ingenuity.

IMPROVING LEARNING CONDITIONS

The following means of improving learning depend largely upon the teacher and upon classroom conditions.

Aids to Learning. One of the ways to make learning concrete and meaningful is through audio-visual or instructional aids. Motion pictures, filmstrips, slides, radio, phonograph records, globes, maps, diagrams, experimental apparatus, demonstration materials, pictures, and models and slides add greatly to the meaningfulness of verbal descriptions. It is important to realize that the advocates of such materials stress the word "aids." They do not recommend that such materials become the sole means of instruction, but that they be used as supplemental devices.

The theory has been postulated that some individuals are eye-minded, some are auditory-minded, and some are verbal-minded. It is doubtful that people can thus be sharply classified. It is agreed, however, that the more sensory avenues that are utilized in learning the more effective learning will be.

Because of their variety and vividness, instructional aids speed and strengthen learning. The development of language in children shows why learnings aids are so valuable. Words are only conventionalized symbols. It takes time, experience, and contact with both words and objects to establish the relationships between individual words and their referents. But if direct contact had to be made with everything the learning process would be discouragingly slow. Instructional aids provide substitutes for real objects and situations that cannot be supplied in the classroom.

Max Wingo, in summarizing some of the implications which psychology has for elementary education, states that all academic skills involve the symbolic and abstract. Arithmetic especially involves "highly conceptual material." The school child must proceed from concrete experience to the abstractions of arithmetic and language, and the way is prepared by meaningful learning. Teachers must provide a variety of experiences which permit the children to use the skills and knowledge they have acquired to date. Using the skill extends and clarifies it in preparation for next steps. Audio-visual aids to instruction provide readily available opportunities to extend experiences. Hoping that circumstances will arise which will clarify meanings is not enough. These must be planned just as carefully as is the teaching of the abstract and the symbolic (291, pp. 291*f*.).

The value of learning aids is indicated by the enthusiasm with which youngsters greet the announcement of a movie or demonstration. They willingly assume a great deal of responsibility for booking the movie, setting up the apparatus, and running the machine. The author was impressed with the interest of a class of eighth-graders as they studied an advanced physiology text before and after watching a classmate cut up the lungs of a cow. The "carver" had bicycled for miles the previous Saturday to get the lungs from a slaughterhouse and had made a detailed study in preparation for the demonstration.

Teaching aids or audio-visual aids are a means of increasing the meaningfulness of schoolwork. But it must be remembered that they are only aids. They should not be so enthusiastically utilized that pupil effort is not called for, overlearning is neglected, or socialized recitation is scorned. For example, motion pictures are often shown in connection with particular classwork, but without discussion of their meaning and relationship to other phases of classwork.

The Role of Success. Experimentation with both animal and human subjects shows that successful performances tend to become consolidated and unsuccessful performances tend to be eliminated. The fact that some behavior is not successful in the eyes of an adult does not mean that the child's action has failed. Youngsters who indulge in temper tantrums may not get their way about food choices, playthings and freedom, but the tantrum is successful in that it calls attention to their wants. When tantrums are completely ignored by patient and consistent parents the undesirable behavior is eliminated. When excuses are not honored by teachers, pupils cease to give them. The explanation for the role of success in consolidating learning is based on the law of effect—those responses which lead to a state of satisfaction tend to be strengthened.

Evidence of the role of success is widely prevalent. Those pupils who enjoy a degree of success in school (1) learn school subjects and (2) learn to like school. Those pupils who do not have the experience of success *learn to dislike school and obviously do not learn the lessons that* are presumably taught. The implications of this fact are direct and unequivocal. Teachers *must* provide every child with an opportunity to do work of which he is capable.

The desire for achievement is frequently listed as one of the fundamental characteristics of human beings. Success adds to the zest for living; it is a motivation to do and to try things beyond the present level of success (105). For children and for adults, success is a powerful stimulant *for continued effort. Lack of success is a frequent and widespread* cause of both minor and major emotional disturbance.

Knowledge of Progress. If two equated groups of pupils are given a learning task and the teaching methods are the same except that one group is informed of progress and the other is uninformed, the informed group accomplishes more in learning. Thus an incentive to continued learning is knowledge of gains. For example, two equated groups of fourth-graders worked twenty periods on arithmetic—the total time being the same for both groups. Members of one group kept charts of individual and group progress. The other group worked without records or knowledge of results. The informed group improved 12 per cent more than the *uninformed group (209).*

There are three reasons why knowledge of progress is such an effective technique. First, knowledge of progress *tends to make the goals* more realistic. You can try this in developing your vocabulary. If you simply study words *in a haphazard fashion,* the chances are that as time goes on you will devote less and less attention to such study. If, on the *other hand, you keep a* word list or a set of vocabulary cards, the growing lists and your awareness that you have mastered some of them will be a strong incentive to continued effort. Second, interest tends to wane

after the passage of time. Checking on progress or receiving from the teacher reports of progress will break the periods of study. As variety is introduced into the learning exercise interest is sustained more readily. Third, knowledge of results helps to capitalize on the law of increasing energy, which states that the closer one gets to his goal the greater the effort he puts forth (285, p. 139). All of you have experienced, or at least witnessed in your classmates, the feverish activity that characterizes the end of the term. It is usually easier to write the last five pages of a term report than the first two. As the goal comes nearer more energy seems to be available. Knowledge of results has the effect of introducing intermediate, short-term goals in addition to the ultimate and final goal—thus providing a more frequent resurgence of energy.

According to research workers, knowledge of results leads to improved performance because (1) such knowledge tends to encourage repetition of successful actions, (2) it helps the performer correct or improve unsuccessful actions, and (3) it gives one an incentive to do an accurate performance, while lack of such knowledge removes the incentive (85). Classroom teachers who habitually inform their students about results confirm these statements.

Knowledge of progress can be conveyed by frequent reports to the pupils. There is no excuse for failing to return to the pupils the papers the teacher has required them to submit. Individual and class progress charts can be used much more widely. Progress charts need not have the same effect upon pupils as status charts. If the teacher will interpret progress in terms of growth "from where you were to where you are," the pupil can more easily bear the disappointment of not being at the head of the class.

Praise and Reproof. One way to give information about the progress toward goals is to utilize praise and reproof. Both are found to be more stimulating to learning than is performance which receives no comment of any kind. In experiments, regardless of the actual merit of work, groups have been consistently praised, some reproved, and others ignored. The praised groups made better average scores than the reproved groups, and the reproved groups made better average scores than did the groups which were ignored. The fact that both praise and reproof lead to better performance has led to more carefully controlled experimentation. The conclusions from such experiments indicate that the really decisive factor has to do with the personality of the teacher (201, p. 74). The teacher must be attentive to the responses of individuals and groups so that techniques of using praise and reproof may be adapted to the current situation.

Rivalry and Cooperation. Learning proceeds more satisfactorily within a group situation than it does on an individual basis. Group rivalry or

cooperation stimulates more rapid learning. The modern school which emphasizes a socialized setting for instructional activities is capitalizing on a proven psychological phenomenon.

The effect of rivalry was tested in an experiment involving fourth- and fifth-graders who were solving addition problems. Rivalry was stimulated between groups equated on the basis of ability, sex, and age by placing scores on the board and calling out the names of the members of the winning group. Over a period of a week, the experimental groups showed marked superiority over the control groups taught in the ordinary manner. It was found that within the experimental groups the effect of rivalry was greater for the younger pupils and for those who were lower on the intellectual scale (131).

Rivalry or competition on an individual basis is also found to be a positive factor in learning. But care must be taken by the teacher to avoid arousing jealousy, envy, and animosity. These responses are recognized as inimical to mental health. Furthermore, the contest must be held in some activity in which there is the likelihood, or at least the possibility, of winning.

Rivalry with oneself is based on the same factors and possesses the same advantages as those indicated above. In addition, there is greater likelihood that goals will be within the reach of the individual; thus frustration and defeat are avoided. Teachers should encourage pupils to compete with their own past record. The attempt to do just a little better, to grow a little beyond, the present point of development is a practicable method for capitalizing on the motivating power of competition.

There is some doubt, from a philosophical standpoint, about the advisability of using competition as an incentive to learning. There are those who believe—with good reason—that competition, which is all too prevalent in our society, is at odds with democratic ideals. Those who share this viewpoint find it advantageous to utilize the motivating power of group membership to facilitate learning.

Cooperative activity, as is the case with competition, capitalizes on the human desire for recognition and is an even more satisfactory way of securing approval. Social approval can be won by service and concern for the interests of others. Of course, some individuals are more responsive to the cooperative approach than others. But it is entirely within the realm of probability that the lack of a cooperative attitude is due to the experiences of the individual, including those to which he has been subjected in the school. Social psychologists point out that in some societies (the Arapesh mentioned earlier, for example) the entire culture fosters cooperativeness, solicitousness, gentleness, and unaggressiveness (187).

It may be noted in our own culture that children's and adolescents' gangs display conflict, competition, *and* cooperation. One seems about

as characteristic as another. This fact should be realized by the teacher because it is the basis for constructive growth through group activity. There is a widespread misconception that competition is the "natural" motivating factor. Experimental studies indicate that cooperation may be used to facilitate learning (159) and that some children, though a minority, even prefer it (180).

One study indicates that the problem is not one of choice between cooperation and competition. So-called cooperative games may generate considerable competition. The important factors are the kind of social situation which exists, the kind of personalities being dealt with, and cultural expectancy (251). It appears that the teacher can find no ready-made answer. It will be necessary to study individual pupils and their influence on one another. The classroom atmosphere established is another factor. In short, the teacher is largely responsible for creating the framework in which either competition or cooperation can be effective.

School situations characterized by cooperation may contribute to learning without running the danger of stimulating envy, jealousy, and animosity. Conditions which lead to the constructive use of cooperation include the following:

1. Relatively small groups consisting of four or five individuals are better than larger groups.
2. Teachers who are themselves cooperative and democratic encourage their pupils to use similar techniques.
3. Relative homogeneity within the group and similarity in size, age, and ability are better than marked disparity between the pupils within the group.
4. Variety and abundance of equipment, so that many do not desire the same tool or device at one time, tends to keep the group on a cooperative basis.
5. Similarly, ample space in which to play and work tends to avert the clash of personalities and the stimulation of competitive attitudes.

Guidance. Certainly there can be no doubt that guidance straightens and clarifies the pathways of learning. But it is possible that too much dependence is placed on the role of guiding learning activities. A summarization of experimental data on the role of guidance concludes that mere guidance is not enough. Animals guided by hand through a maze did not learn to run through it. Self-initiated activity is an essential feature of learning under guidance (69, p. 231). Similarly, when the father or the teacher does the algebra problem there is no assurance that the pupil learns algebra. Guidance may be a useful *supplement* to goal-directed pupil activity.

Effective guidance of learning activities is essentially a process of preventing or correcting errors and encouraging actions which are most

likely to lead to success. Some authorities advocate allowing the learner to experiment before introducing some guiding suggestions. Others recommend coaching the learner before permitting any attempt at performance. These authorities feel that it is easy to learn incorrect methods and that "unlearning" must then be added to the learning process. However, the consensus favors the first approach. The advocates of this approach assert that initial guidance tends to make the learning piecemeal rather than integrated.

The learning of concepts varies but little from the above suggestions. It is recommended that guidance be kept at a minimum in the early stages of learning, though it is necessary to give enough initial instruction so that the nature of the task is understood. For example, in learning to multiply, the general concept of multiplication should be presented and suggestions made about the placement of figures. Then problems are presented with which the pupils may deal. Guidance is offered when it is needed but not necessarily whenever it is requested. Too many teachers explain by doing the problem. The pupil thinks he understands until he is left to his own devices. An essential feature of good learning is a chance to do, to experiment, to try, to experience individually. Care must be taken that guidance remains guidance. This is exactly the point that personnel workers and guidance experts emphasize—that the individual must in the final analysis be allowed to make his own decision (255, p. 20).

Effective guidance is largely dependent upon motivation. The college student may believe what he is told about effective methods of study but may lack the drive to practice what he hears. Children may be impressed by the harmful effects of germs yet find it inconvenient to wash before every meal. The need for balance is indicated. There must be enough guidance to stimulate activity, but guidance must be withdrawn before the pupil loses initiative or, worse yet, becomes dependent.

SUMMARY

Psychological Principle	*Practical Application*
Distributed effort is superior to massed practice in the consolidation of learning.	*Regular and periodic study and* drill should be a concern of both the teacher and the pupil.
Overlearning results in better retention than does one repetition.	Recapitulate what has just been read. Repeat memorization materials beyond the point of one repetition.
A combination of whole and part methods facilitates learning.	Get the goal in mind, learn by wholes, and master difficult aspects by utilizing part methods.
Active recall, by enlisting pupil participation, consolidates learning.	Encourage pupils to review without the aid of notes and topical head-

Making applications, by adding to meaningfulness, speeds learning and aids retention.

Insight speeds learning and facilitates retention.

Aids to learning, by utilizing many sensory avenues, tend to simplify the learning process.

The experience of success is a strong source of motivation to continued learning.

Knowledge of progress is a stimulant to prolonged effort.

Either praise or reproof is found to be superior to ignored activity as a means of motivation.

Learning activity involving competition or cooperation is superior to isolated effort.

Learning is subject to the law of multiple causation. Many factors influence the pace and permanence of learning.

ings before the complete review which does use notes and headings.

Relating schoolwork to pupils' needs and problems demands the application of what is learned.

Fundamentals must be stressed, objectives must be clarified, and relationships must be established.

Aids to learning must be regarded as supplementary and complementary. Various aids should be used.

The feeling of success must be achieved by all pupils. This means that there must be variety in the tasks.

Reports to pupils and individual progress charts are means of revealing pupil progress.

Use praise, *when deserved*, on all pupils.

In using cooperation and competition the dangers of jealousy, envy, and animosity must be avoided.

No single technique will serve as a panacea for learning problems. Each technique must be used with cognizance of its relations to other techniques.

PROBLEMS AND EXERCISES

1. Make a list of twenty words which are new to you. At one sitting learn ten of the definitions, noting the exact time it takes to thoroughly learn the entire list. Divide the time by 5 and study the other ten in five daily periods of that shorter length. Which process do you feel resulted in the better learning?

2. For a week try the experiment of reciting to yourself the materials you have studied before attending class. Does it make any difference in what you get out of class?

3. For each of the principles listed in the summary of the chapter list another way in which it could be applied.

4. List six to ten ways in which you might achieve better insight to your academic study. Would these methods be helpful to your pupils when you begin to teach?

5. Discuss with a classmate profitable and unwise ways in which teaching aids have been used in the classes you are now taking.

6. Draw up a chart of progress for a class of algebra students. Present it to your instructor for suggestions.

7. Cite some instances in which you have observed both praise and reproof being used constructively.

8. Make a list of school practices that tend to encourage an unwholesome type of student competition. Could these be *eliminated* by better teacher guidance?

9. Does the statement "guidance is seeing through Johnny so Johnny can see himself through" have any implications for classroom practices?

10. Which of the principles in this chapter do you feel is of least importance? Of most importance? Does your answer agree with that of your classmates?

SUGGESTED ADDITIONAL READINGS

Beaumont, Henry, and Freeman Glenn Macomber, *Psychological Factors in Education*, New York: McGraw-Hill Book Company, Inc., 1949, pp. 79–111.

This chapter is devoted entirely to a discussion of the effects of success and failure. The authors suggest some ways in which feelings of success can be generated in those who differ markedly from the "average."

Bernard, Harold W., "Teaching Methods and Pupil Adjustment," *Mental Hygiene for Classroom Teachers*, New York: McGraw-Hill Book Company, Inc., 1952, pp. 199–225.

This chapter deals with the roles of interest, pupil purposing, and human resources in the school. The factors point the way to securing better results in the teaching-learning situation.

Martin, William E., and Celia B. Stendler, *Child Development*, New York: Harcourt, Brace and Company, Inc., 1953, pp. 414–439.

A number of illustrative cases are used to describe the process by which the child is "socialized" in the school. Classroom climates (democratic, laissez-faire and authoritarian) and competition-cooperation as factors in socialization are discussed.

Wiles, Kimball, *Teaching for Better Schools*, New York: Prentice-Hall, Inc., 1952, pp. 3–29.

A number of teachers and their orientations are described. Implications for teaching are drawn from the nature of the learning process.

AUDIO-VISUAL MATERIAL

Learning to Understand Children, Part I, A Diagnostic Approach, McGraw-Hill Book Company, Inc., 330 West 42d St., New York 36. (21 min, BW, sd.)

This is an outstanding film which literally shows this chapter in action. Motivation, success and failure, peer status, etc., are shown as learning factors in the life of Ada Adams.

Learning to Understand Children, Part II, A Remedial Program, McGraw-Hill. (23 min, BW, sd.)

This is a continuation of the story of Ada Adams. The classroom teacher develops a simple but highly effective program for capitalizing on Ada's assets.

16

EMOTIONAL ASPECTS OF EDUCATION

IF A MYSTERY intrigues you, read about the mystery of emotion. The clues are deceptive. What appears to be good may turn out to be bad. What seems to be dangerous is often a lifesaver. The villain may be the hero. Emotions are as perplexing as the most baffling mystery.

Emotions and their mysterious aspects are an inescapable part of life. The anonymous individual who said that the "intellect is a mere speck afloat upon a sea of feeling" was a wise psychologist. As teachers, we should realize that much, perhaps most, human behavior is instigated and sustained by emotion. We should like to believe that man's action is directed by thought processes—that his behavior is rational. But an examination of the evidence leads inevitably to the conclusion that emotion is a dominating factor.

The teacher who recognizes the partnership of emotion and reason has taken a large step toward accomplishing the basic objectives of education. Such a teacher will consciously aim at greater emotional maturity for school children at all levels (211). Briefly stated, this maturity will consist of (1) inhibition of expression of the negative emotions, (2) development of a higher tolerance for disagreeable circumstances, and (3) cultivation of the positive emotions.

THE NATURE OF EMOTION

The Meaning of Emotion. Some psychologists would like to get rid of the word "emotion," believing that it is a vague and relatively meaningless word, as is the word "instinct," in that it covers a multitude and variety of conditions. Specifically, emotion may mean the upset condition of hate or fear, in which physiological functioning prepares for fight or flight. These emotions may lead to harm or destruction of self or others. On the other hand, emotion may mean the positive conditions of love and drive. Physiological functioning in these emotions leads to a feeling of euphoria, which in turn may lead to the improved welfare of

self and others. Emotion may mean a rather transitory state, such as brief attention or an enduring interest which drives the individual toward a goal. It may mean a relatively mild feeling, such as friendliness toward an acquaintance, or an intense feeling, such as a paralyzing fear during a flood or bombing. Our job as teachers is to understand and deal with the varieties and intensities of emotion.

Emotion is more than overt activity, though it is upon overt activities that judgments and evaluations of emotion are largely based. The important factor is the inner feeling that stimulates a certain activity or a predisposition to engage in the activity. Thus, a frequently cited, though oversimplified, definition is as follows: Emotion is a feeling state (affective experience) accompanying an upset condition of the organism. It is a stirred-up state of the mental and physical aspects of the individual.

Physiological Aspects of Emotion. W. B. Cannon has formulated what is sometimes known as the emergency theory of emotions. This theory is that emotion has certain physiological aspects which prepare the individual to meet an emergency (46). These physiological responses include the release of adrenin, or adrenalin—a hormone secreted by the adrenal glands—into the blood stream. This in turn causes an increased rate in heartbeat, raises the blood pressure, causes more rapid respiration and constriction of the blood vessels on the surface of the body, and makes possible the more rapid coagulation of blood if there is a cut or wound. The flow of digestive juices is inhibited.

These physiological changes do not cause the emotion—though they are a part of the emotion. After injecting adrenin into the blood stream of experimental subjects, researchers reported that some subjects experienced a variety of emotions, others felt no emotion at all, while the remainder said they felt that they were about to have an emotional experience (48). Therefore, in addition to the physiological changes produced by adrenin, a situation is necessary to precipitate the emotion.

It is believed that these characteristics were a great advantage to man at some time in his history. They prepared him for vigorous action, thus aiding in survival. But it is doubtful that these characteristics are such an advantage to man in civilized society. In fact, in view of the restrictions placed by society and culture on these responses, such emotions are unhealthful. For instance, when one becomes angry and cannot burn up the extra energy made available by his anger, his physiological changes create a kind of poison in his system. Present-day custom does not permit one to get rid of emotions through violent conflict. Hence, physical and mental health hazards are involved in repressing emotion.

It is obvious that emotional states cannot be ignored. Whether we wish it or not, emotions are conditioning the pupil's responses. It is necessary to act upon the knowledge that fear and anger are handicaps to ef-

fective learning. Here is the psychological justification for avoiding shaming and sarcasm. Fear of crucial examinations or punishment should be replaced by more positive means of motivation.

The daily practitioner of educational psychology will seek to understand the nature and extent of the emotions that the child brings to school from outside sources. This will involve a knowledge of home and community relations. If the pupil is worried about family problems, his emotional state will inhibit learning. He may appear to be mentally slow. He may seem to lack motivation to do the work of which he is capable. The teacher may be helpful by showing the pupil another way of looking at the problems or handicaps. Many teachers have arranged a conference with parents in which they explained the emotional burdens placed on the child.

In the past, emphasis has been placed on acquiring knowledge and skill. At present, attention is given to the development of the "whole child." No choice need be made between knowledge and the child. It is a matter of recognizing that learning proceeds more effectively when pupils are not emotionally disturbed. Guidance in personality adjustment is an integral part of instruction. Research shows that emphasis on meeting the emotional needs of pupils will improve their learning (43). Another study reported encouraging results in "remedial reading" where emotional therapy was made a part of the program. Among pupils who had minor personality disturbances it was found that the amount of reading gain was proportional to the gain achieved in emotional adjustment (23). The teacher's attempt to understand emotional behavior is the beginning point in proficient teaching.

The Piling Up of Stimuli. Another consideration is the cumulative effect of stimuli which produce emotion. The barking of a dog may not bother us at first, but as the barking continues we become increasingly irritated. The ebullient energy of children may be gratifying to the teacher early in the day, but the energetic child may be a source of irritation in the afternoon. Similarly, children may be only slightly bothered by the insistence of the teacher that they accomplish more in reading, arithmetic, or algebra, but as the pressure continues their resentment and hostility mount. Pupils may at first be able to cope with the strident demands of an autocratic teacher, but they often find it increasingly difficult to contain their emotion as the demands continue.

The film "The Other Fellow's Feelings" [1] shows this cumulative effect in the classroom. An adolescent girl dropped a bottle of perfume. A boy held his nose and then decided to have some fun by calling the girl "Stinky." Periodically, in and out of school, the boy held his nose or

[1] See Audio-Visual Material, p. 314.

repeated the appellation. The teacher noted a falling off in the girl's work, but an interview with her did not disclose the difficulty. Finally, the girl broke out in tears while trying to recite in class. Minor disturbing influences finally mounted to major proportions.

Two suggestions for the teacher can be made in this respect. First, minor irritations should be removed as rapidly as possible. Second, teachers may help pupils take a different attitude toward the disturbing influences through group discussions and individual conferences. School practices that deserve consideration in connection with emotions may include overemphasis on grades, competition which involves unequally matched contestants, class sessions requiring pupils to sit still for prolonged periods, class sessions held in the presence of distracting noise or inadequate lighting, and demand for immediate and strict obedience.

The cumulative aspect of emotion has implications for the out-of-school life of pupils as well. It is thought by some that the extent of mental illness, the large amount of interpersonal stress, and the frequency of delinquency and crime may be indicative of the fact that individuals are expected to withstand pressures which are beyond their ability to endure. The heightened satisfaction that can be derived from daily living makes emotional direction and control highly desirable.

There is a positive as well as a negative side to the piling up of emotional stimuli. Small daily satisfactions which derive from accomplishment may serve to establish enduring interests. The assurance that one is accepted by the group can fortify him for meeting those instances in which he encounters hostility. Daily acts of kindness on the part of the teacher will help pupils to accept firm handling of undesirable behavior. Moreover, emotional maturity will be achieved through this slow piling up of mild and pleasant emotions. Emotional immaturity indicates that disintegrative emotions have accumulated too rapidly for the individual to absorb.

The Genesis of Disruptive Emotions. Teachers need to appreciate the influence of physical condition upon emotions. Some children are inadequately fed before coming to school. They will be more disposed to temper tantrums. Others may be irritable because of a nagging headache that results from defective and uncorrected vision. F. L. Goodenough found that children are more likely to become angry when they are tired, ill, sleepy, or hungry (106). It would be well for teachers to make a special effort to remain calm just before lunchtime and just before the close of the school day.

Pupils may be irritable because of tension between their parents. Their uncertainty at home may make them less confident at school, with the result that they are less competent than they might be otherwise. An autocratic father or mother may have made difficult demands at home. The

tension is released by a tirade against a classmate whom the child knows will not fight back. Perhaps he has found that he can vent hostility upon the teacher. The good teacher is aware of these factors in the development of disruptive emotions, and instead of demanding the respect "that is due his position" he begins to wonder what is behind the pupil's hair-trigger emotions.

There is the possibility that susceptibility to disruptive emotions is due to innate differences. The "delicate" child may have more difficulty in achieving emotional control than do those who are physically robust. Children with a sensory defect or glandular imbalance may have a lower tolerance for upsetting stimuli than do "normal" children. Whatever the factors, it must be realized that each child has his own unique threshold for dealing with problems (113).

School conditions may be factors in the genesis of disruptive emotions. Children who are enrolling in a particular school for the first time are under emotional strain. The frequent rigidity of curricular demands are mentioned in educational and psychological literature. School failure is an anachronistic practice which is gradually yielding to the experimental findings of mental hygiene and psychology.

The Genesis of Constructive Emotions. Interest, affection, friendliness, and humor bring about constructive emotions. The emotional atmosphere of the home and the school is important. Bodily predisposition to experience enjoyment will come through proper diet, sleep in adequate amounts, balance between rest and exercise, and the correction of sensory difficulties. The school experiences of the pupil should be gratifying. He should receive understanding and help in his peer relationships. Some attention should be given to those special interests that have become, or are becoming, a part of his personality.

DEALING WITH SOME DISRUPTIVE EMOTIONS

Although it is not possible to distinguish sharply between emotions which have a salutary effect and those which are upsetting, on the basis of the physiological processes involved, there is a difference in their effect. Fear produces the same endocrine effects as love; but extreme fear inhibits action, interferes with digestion, and makes the person feel ill, while love stimulates activity, aids digestion, and produces a feeling of well-being. Hence, the aim in dealing with upsetting emotions is to reduce or eliminate them. The aim in dealing with constructive emotions is to enhance their effect.

Fear. Some fears seem to develop and to disappear with maturation. A baby may readily go to anyone who holds out his arms. Later he may show a fear or even cry or scream if he is approached by a stranger. Still later in his development the fear disappears and he freely talks with, and

approaches, new acquaintances. The teacher's problem arises when he has pupils of any age who have not developed through the last stage. It then becomes necessary to aid in the developmental process. Depending upon the particular individual and the fear concerned, one or more of the following suggestions may apply.

1. Set a good example. It may seem that there are few situations in which the teacher can set a good example which will prevent or eliminate fears. Actually, there are many such instances. The little boy who brings a frog to school may find that he can frighten his teacher with it. But his delight is less important than another child's discovery that the teacher is afraid. It is necessary not to show fear. Actually, a great number of fears, even of specific objects, are vague in that the fearful person does not know what it is about the thing that causes his fear. It may very well be that these vague fears have been absorbed from some adult. The children sense, rather than understand, the shrinking, withdrawing tendency on the part of the adult and become fearful in turn. One should attempt to define and specifically describe the fear so that it will disappear. It will then be unnecessary to set a good example. The absence of fear is the good example which will help students to overcome or avoid fears.

2. Recondition the pupil's fears. If a pupil is afraid of examinations he can be reconditioned by being given many examinations accompanied by pleasant circumstances and aftereffects. The teacher can praise the results, make comparisons with previous accomplishment, and encourage the feeling that each child has contributed to the success of the class. Above all, the teacher must avoid placing too much stress on the outcome of the test. Many people who claim to dislike tests voluntarily take tests that appear in magazines and newspapers because nothing depends on the result. There is nothing to fear, and one has the opportunity to discover how he does in comparison with others. The same orientation might well be developed in school.

Other fears can be dealt with in much the same way. Children who are afraid to recite can be given easy questions or subjects in which success is assured. Fear of people can be dealt with similarly by encouraging the pupil to do little things in the presence of strangers—finding them chairs, showing them a mural, introducing a classmate—that will give the child a feeling of satisfaction. Certainly, it is unsound policy to believe that fears can be overcome by force. Requiring a child to recite a poem for the P.T.A. when fear is present will not teach him to be confident. It should be remembered that reconditioning as a therapeutic measure consists of creating pleasant associations for a stimulus that has previously been unpleasant.

3. Provide a variety of experiences. This is just as important in dealing with fears as it is in acquiring intellectual knowledge. An experienced boatman is not afraid of rough waters, though he may have a healthy respect for the dangers involved. The adult is not afraid to cross the street, though he may be cautious and observe traffic signals. Children's experiences in taking examinations, meeting people, and studying insects and animals will be helpful in developing knowledge that will avert vague, bothersome fears.

The role of experience in overcoming fear is illustrated by an account of the way in which a child's fear of the barber was overcome. Bud's fear apparently arose from associating the white-jacketed barber with a doctor who had given him shots. On the first visit he was forcibly shorn despite his fear, but the next time it was the child who won. The nursery-school teacher volunteered to help solve the problem. She made plans with the barber and put a white smock over her dress and wore it in school. She had the youngsters wrap one another in white cloths. She took the boy on an automobile ride, and when a stop was made at the barber shop he refused to get out of the car but did wave at the barber. The next day the teacher took another boy by the hand and prepared to go into the shop. Bud hesitated but took the teacher's other hand and accompanied them. There was a brief visit and a ride was taken in the barber's chair. Bud's attention was called to the clock, mirrors and the other chairs. On a later visit a cloth was placed around Bud, and the hair cutting proceeded smoothly (166, pp. 138*f*.).

Ignorance is a strong ally of fear. The child fears the unknown just as the adult fears the uncertain future. When the child acquires knowledge, some of his fears are reduced. This knowledge is not a matter of verbal description or explanation—fears are emotions and an "intellectual" approach will not suffice. Knowledge acquired through experience is a helpful approach. Vague, unanalyzed fears are likely to grow into anxieties. If a fear is not eliminated, it tends to grow more intense with the passage of time and/or to become attached to other similar situations.

4. Help pupils develop skills. Skills give one the ability to do something about the fear. Knowledge of subject matter will reduce the child's fear of examinations. Skill in meeting and talking with people will reduce his fear of social situations.

Skills need not have to be in the specific area of fear. Confidence in one area gives the individual a sense of self-sufficiency that will spread to other activities. A pupil's success on the playground will help him show confidence in the classroom. His ability to roller-skate will encourage him to learn to ride a bicycle. One teacher had noted that an academically inept sixth-grader did not show hesitancy about reciting. One day he asked the boy how it happened that he had so much assurance

in class. The boy's answer was, "I know that I'm not very good in arithmetic and language, but I can always win the other kids' marbles."

5. Avoid force or ridicule. Force will not eliminate fear. One cannot make a child who is afraid of water like swimming by throwing him into the pool. A swimming instructor at the secondary level, working with a boy who was afraid of water, noted that his pupil became stiff and rigid when the water came up to his waist. Instead of forcing him into deeper water he told the boy in advance what he was going to do. He splashed water in his face and persuaded him to duck his head under the water. Finally, in shallow water, the boy was counting the instructor's fingers which were held before his submerged face. Working slowly, the coach got him into deeper water and encouraged him to take a few strokes. Gradually the rigidity disappeared, and the boy finally learned to swim.

Fear is an emotion and cannot be eliminated by reason, by force, or by shaming. Confidence in the other person, the accumulation of successful experience, reconditioning, and the gaining of skills—all of which involve time and patience—are the ways in which fears can be overcome.

Anger. The procedures involved in teaching the control of anger are quite similar to those suggested for dealing with fear. The example set by others is important. The development of skills that will lead to fewer thwarting circumstances will reduce anger. Experiences which aid in understanding people and things will reduce occasions for anger.

The Biblical admonition "a soft answer turneth away wrath: but grievous words stir up anger" is psychologically sound. Meeting anger with anger tends to build up the emotion. A poor time to attempt to teach control of anger is while the pupil is angry. Ideas, suggestions, and admonitions about controlling temper should be implanted during periods of calm. If a conference is called for, as should be the case with upper elementary and secondary pupils, the conference should be held after the storm has passed. Yet all too frequently the angry individual is dealt with immediately. He is banished from the room or sent to the principal's office.

Another suggestion for dealing with anger arises out of the nature of the emotion. Anger is occasioned when one is psychologically set to act in a certain manner and is prevented from doing so. Anger is a response to restraint (87, p. 143). Therefore, experts in child psychology advise parents to give a little warning when the child's present activities are to be interrupted. Parents are advised to say, "You should start putting your toys away because we are going to have lunch in a few minutes." Even though the child has little conception of time, the warning will be appreciated. Anger in the classroom can be prevented by similar reminders.

A warning that the period is about to end will tend to avert frustration. A planned rotation in the use of supplies will help to avert conflicts.

Hate. Intense dislike for a person or persons or a situation is perhaps infrequently encountered during the school years. Yet the beginnings are present; and the possibility of deliberately engendering hate was shown during the Nazi regime in Germany (181). Here again the example of mature adults is helpful. A sound knowledge of other people aids in understanding. Skill in dealing with people and situations makes hatred unlikely.

The lack of understanding, the suspicion, or the misinformation leading to a dislike that *may* grow into hate is not a simple condition for school influences to overcome. The child comes to school with ready-made attitudes that are acquired from his parents, siblings, and neighborhood playmates. The influence of the school does not easily change these attitudes. But changes do take place slowly. Studies indicate that the attitudes of adolescents are more closely akin to the evaluations of open-minded experts than are the attitudes of children in the early grades. Part of this increased objectivity may be attributed to personal experience, but part of it is due to the direct teachings of the classroom (199, p. 1001).

It is obvious that the school plays an important part in the development of attitudes beyond the home. Some teachers produce a marked effect on children, and some experiences are much more significant than others. Study after study confirms the fact that there are wide differences in teachers, in pupils and their reactions, and in methods of teaching. There are many factors in attitude development to which teachers may give attention. The way in which a child plays with his peers, what the child reads and how he interprets it, and how he responds to motion pictures, radio, and television should be understood by the child. The child's attitude toward police, clergymen, teachers—should be a concern of the school. It is not enough merely to provide the experience. There is a need for interpretation through explanation and discussion.

Since goals are more readily achieved when they are clearly defined, it is obvious that the teacher should not leave to chance the basic attitudes that are being formed and re-formed. Along with the conception that the school is concerned with the "whole child" must go the responsibility for conscious attention to attitudes (117, p. 149).

Values of Disturbing Emotions. It is generally desirable to reduce upsetting emotions. However, guidance is complicated by the fact that some positive values accrue from fear, anger, and hate. Fear has the value of helping to keep individuals out of dangerous situations. Fear of examinations may cause the pupil to apply himself more assiduously to his work.

Certain kinds of anger may be advantageous. Anger with oneself for doing less than he is capable, anger about unjust situations, and anger with obviously unfair individuals may serve to motivate an otherwise complacent person. The values of anger are dependent upon its direction.

Hate may also be justified. Hate, defined as a strong dislike for certain principles, might well be encouraged in the upper grades and in high school. Hatred of war, of human injustice, of racial discrimination, or of international selfishness may serve to motivate individuals to become a counteracting influence. This kind of hate is directed against practices rather than persons. It is impersonal rather than personal. It is general rather than specific, and it is directed rather than uncontrolled.

DEALING WITH THE CONSTRUCTIVE EMOTIONS

The problem of dealing with the constructive emotions is not substantially different from that of eliminating or reducing the negative emotions. What is done to reduce anger will also enhance such emotions as sympathy and affection. The positive approach to emotional control will be studied in this section by dealing with affection, humor, pleasure, and sympathy.

Affection. For educational purposes affection may be defined as a mild emotion characterized by a feeling of fondness, tenderness, or attachment to others. Affection is an important factor in daily living.

The role of affection in the school is twofold. One aspect is the affection of the teacher for pupils. Studies of "best-liked" teachers show that pupils respond favorably to qualities which underlie affection, such as sympathy, kindliness, patience, courtesy, and interest (141). On the negative side, it has been shown that delinquency can be traced to lack of affection or a feeling that others have no affection for him. Affection is an important element in the atmosphere of the classroom. Affection must not be forced, because children are quick to detect sham. Genuine affection arises from a sincere interest in children and a knowledge of their abilities, problems, and limitations.

The other aspect is the growth of affection in children. The example set by the teacher is important. Not only must the teacher use patience in dealing with pupils; he must notice and praise its manifestation in his pupils. Many primary teachers have found that keeping small pets in the classroom can be a means of encouraging gentleness in children. A few words of counsel can help pupils transfer this conduct to human relationships. Group work, committees, group discussions, and classroom projects are all means of providing opportunities for children to develop the familiarity and understanding that leads to affection.

In the matter of group work designed to encourage affection it will be well to capitalize on the revelations of sociometric grouping. This

technique can be used to help a social isolate become better oriented or to increase the productiveness or motivation of individuals. The technique can also be used to develop affection. The starting point is to ask such a question as, "With whom would you like to work in preparing a panel discussion?" "Which pupil would you like best as a substitute in the teacher's absence?" or "By whom would you like to sit?" (Fig. 17).

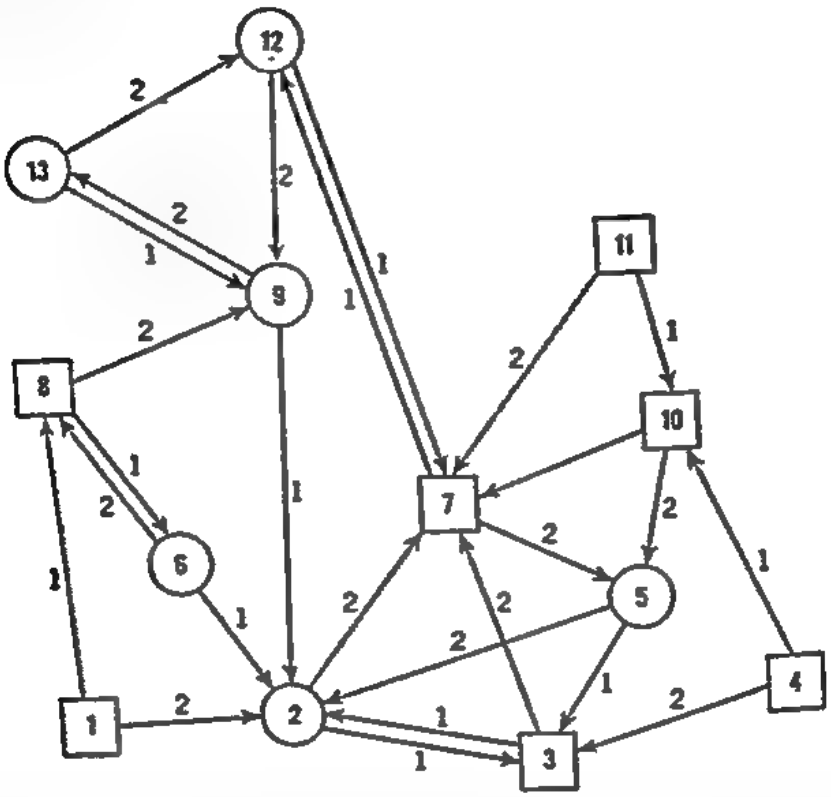

FIG. 17. Sociogram in which squares represent boys and circles represent girls. The number by the line indicates first or second choice. Numbers 7 and 2 are "stars" or much chosen individuals. Numbers 1, 4, 11 are isolates—not having been chosen by anyone so far as the particular question was concerned. Numbers 2 and 3, 12 and 7, 13 and 9, and 6 and 8 are mutual choices.

Since affection must be built upon existing foundations, certain principles should be observed in sociometric grouping. However, they should be applied in accordance with the particular conditions.

1. Mutual choices should be placed together.
2. Isolates should be given their first choice.
3. A minimum number of isolates should be placed in a group.
4. Stars need not be given any of their choices (though no effort should be made to avoid giving them one of their choices). Their position as stars is probably indicative of their ability to adjust to many different personalities.
5. Natural groupings should be maintained to as great an extent as possible. (Thus, in Fig. 17 2, 3, 5, and 7 would form a group; however,

ing a masterful artist sing. Pleasures derive mainly from two sources: (1) the satisfaction of basic needs or (2) the exercise of one's capacities. Children enjoy running, jumping, and romping because of their capacity for physical activity. By and large, competent pianists or golfers find pleasure in the exercise of their skills. These sources of pleasure suggest rather obvious techniques by which teachers can help pupils derive pleasure from their educational pursuits.

School children will achieve pleasure from their school activities if those activities are designed to satisfy such basic needs as security, accomplishment, adventure, belonging, and physical satisfaction. The relationship of need satisfaction to pleasure further emphasizes the child's need to be accepted for what he is by both pupils and teacher. The necessity for designing schoolwork appropriate to individual capacity again becomes obvious.

The exercise of one's capacities as a step toward the achievement of pleasure indicates two school responsibilities. One is to provide a variety of work. This means exacting academic requirements for some; recognition of athletic prowess for others; the opportunity to participate in musical productions for others; and leadership challenges, manual arts, and homemaking for still others. The second responsibility is to encourage the development of skills. It is the *developed* capacity which, when exercised, gives pleasure. One who has a capacity for playing a good game of tennis but who has never held a racket in his hand has no opportunity to achieve pleasure from tennis. The same principle applies to skills in arithmetic, writing, and science.

Humor. A sense of humor adds greatly to the pleasure one derives from life. Opportunities to exercise a sense of humor should be consciously sought in the classroom. This requires more than a good-humored teacher; it involves the need for insight into the cause of humor. In the primary grades, humor is occasioned by what seems to the adult crude showing off and perceiving the unexpected. Young children find humor in the element of superiority (199, p. 825). Thus, first-graders think that making faces is extremely funny or find the spilling of paint or a box of crayons quite humorous.

The child must have the opportunity to progress through the developmental stages of humor. At a somewhat later stage, he finds humor in incongruities. Pupils in the intermediate grades and upper grades find humor in crude (to the adult) play on words or in practical jokes, and these forms of humor may be found at the high school level. Another stage of development is represented by an increase in amusement at jokes about sex, which were formerly not understood and are perhaps only partially understood at present. These developmental stages prepare for

the basic element of adult humor—the unexpected occurring in the place of an event for which set has been established.

An understanding of the developmental stages of humor will help the teacher in encouraging the exercise of humor in the classroom. He should make an effort to laugh with students rather than at them. Teachers are known to use sarcastic witticisms that are anything but humorous to the pupils. Since laughter fosters a healthy functioning of the body and increases the enjoyment of living, there should be an attempt to make schools less solemn than they often are. This is accomplished by *relaxed and confident teachers.*

PROJECTIVE TECHNIQUES AND EMOTIONAL RELEASE

The Meaning and Purpose of Projective Techniques. A projective technique is one in which a person places *himself* in a situation to give that situation meaning. The pioneer technique was the Rorschach blots—*symmetrical blots of ink made by dropping ink on a piece of paper and* folding the paper to produce two symmetrical halves. The subject is then asked to tell what he sees in the blot—just as we use our imaginations to *see various animals, objects, and characters in clouds. The individual* "puts" himself into the blot to give meaning to what is in reality meaningless. What one sees is a revelation of himself rather than one of objective discernment (222). H. A. Murray's Thematic Apperception Test consists of a series of pictures for which the subject is asked to "tell a story." Since the picture might tell any number of stories, what he tells about the picture is a projection of the individual (200). Such techniques are used to understand better the thinking and emotions of individual subjects.

The techniques briefly described above are used as a means of personality analysis. Projective techniques can also be used as a means of emotional release. Thus, it is felt that one experiences catharsis from some kinds of projective techniques. *A child who senses that it is wrong* to repudiate a parent (for either a felt or a justifiable reason) may be unwilling to kick or curse that parent. However, under the guidance and encouragement of a therapist, he will play with dolls in such a manner that the doll child *injures the doll parent. It has been experimentally* confirmed that such play enables many children who are experiencing difficulties to exercise their negative feelings more wholesomely.[8]

Some children find *release in creative* writing. Upper grade and secondary school pupils release their feelings and perhaps get a better

[8] See Virginia Mae Axline, *Play Therapy*, Boston: Houghton Mifflin Company, 1947, or Clark E. Moustakas, *Children in Play Therapy*, New York: McGraw-Hill Book Company, Inc., 1953, for detailed explanation of the advantages and limitations of the technique.

perspective of their problems through writing that places the author in the role of a hero (236). It seems obvious that the junior high school boy who wrote the following poem gained both understanding and release from his composition.

Pretty Anna May Malone
Had a heart as hard as stone;
Every year since she was eight
She has been my best playmate.

I half loved that Irish kid
'Till she said just what she did,
Said for me her love was through
'Cause she'd heard I'm half a Jew.

She doesn't need to feel high-toned
'Cause her dad kissed the blarney stone.
I don't think I know it all
'Cause my dad had a wailing wall.

Time will show you, Anna May,
The big mistake you made today.
It's the truth I'm half a Jew
But that's the half that cared for you.

Finger and brush painting, crayon and pencil drawings, and clay modeling have also been used as projective techniques for both emotional release and better understanding.

Using Projective Techniques in the Classroom. An understanding of the purposes of projective methods, and a partial use of the principles involved, will help teachers solve some of the difficult problems of emotional adjustment (219). The whole area of projective devices suggests that an individual puts himself into many, if not all, of his activities. In short, the manner in which an individual does his work, the manner in which he meets and deals with his peers, as well as the way he paints and plays in experimental situations, all reveal the inner self. (Incidentally, this has a rather revealing implication for the teacher: The way in which he describes the personality of his pupils is indicative of his own personality trends.) Awareness of behavior as a symptom will help teachers see the futility of trying to alter established modes of pupil conduct without first determining the causes. This conduct may be undesirable, such as impertinence, disobedience, showing off, or bullying. It may be *apparently desirable*, such as overconscientiousness in one's work, excessive neatness, excessive quietness, or quick subservience to the will and requests of others. When the teacher takes the view that such behavior

is symptomatic, he will have taken a large step toward constructive assistance. The teacher can help pupils get therapeutic release from play activities if he will guard against showing shock. When a child builds something in clay and seems to take delight in destroying what he has created the teacher should avoid saying, "Why, Bill, that's an awful thing to do!" It will do boys no great harm to make dire threats about murder and mayhem when they are playing Dick Tracy and gangsters. It is a part of the wisdom of the organism to attempt to effect an equilibrium in the face of a disturbing influence. Spontaneous play of children tends to follow this procedure if there is not too much adult domination and moralizing. One of the important elements of projective techniques is *permissiveness*, a factor which has been used successfully as an approach to remedial reading (64).

There are opportunities to approximate projective methods in formal curricular pursuits. Art, language study, literature, physical education, and practical arts may provide the pupil who has problems with an opportunity for release. Teachers should encourage spontaneous creation in writing and drawing. Giving advice on the proper techniques for handling materials does not violate this principle of freedom.

Several aspects of the curriculum require a rather rigid conformance. Words must be spelled in a certain manner, and the solution of algebra and arithmetic problems is rather stereotyped. The names of objects and persons must be pronounced in certain ways. Without questioning the great advantages of conformity, we can say that these situations sometimes produce stress in some children (111). Some of the stress may be avoided by permitting freedom where conformity is relatively unimportant. Art, music, and dancing have for ages been avenues for emotional expression and for building interpersonal unity. However, even such avenues for expression as these may become stilted and formal if the emphasis is on the outcome rather than on the process.

It is clear that teachers should permit and encourage all creative variations which do not actually interfere with accomplishment. Creative expression emphasizes the importance of recognizing the emotional elements involved in most schoolwork. Projective theory emphasizes the many avenues for the release of disturbing emotions in routine activities.

A manual-arts teacher, concerned because his shop was becoming the "dumping ground" for pupils who were unable to adjust satisfactorily to academic work, decided to see what he could do to help pupils. Instead of emphasizing craftsmanship he encouraged boys to do what they wished in the shop. He discovered that it was possible to help many boys merely by providing an opportunity for creativity and accomplishment. He also found that in the atmosphere of freedom the boys slowly began to reveal to him some of their felt difficulties. Learning these difficulties

made it possible for him to give constructive advice and to devise additional opportunities for release.

Teachers of English have found that they can help pupils put up with some of the negative conditions in which they find themselves by encouraging them to write themes on "My Pet Peeve," "My Favorite Sport," or "My Ideal Teacher." Poems which express secret feelings are often given to teachers who have the confidence of their pupils, with the request that the poem not be shown or read to other people. There can be no doubt that these compositions serve as a means of emotional release. The important things for the teacher to remember in approximating the conditions of projective techniques are to (1) avoid moralizing about the activity, (2) permit and encourage the feeling of freedom, (3) seek to develop a high degree of rapport with the student, (4) accept the child and his activities as objectively as possible, (5) provide as great a variety of free and creative activities as is feasible, (6) remember that constructive emotional development is at least as important as academic accomplishment.

EMOTIONAL MATURITY

The Relative Nature of Maturity. Although the word "mature" means "ripe," or full development, the psychological meaning is more flexible. Obviously, a child is immature as far as physical development is concerned. He may be mature in the sense that he has reached the development which is typical for his age. A four-year-old who has a temper tantrum only once every three or four weeks may be considered mature. A six-year-old who dawdles only on Saturdays is mature. An adolescent who quickly recovers from a broken heart is mature for his age and is developing toward conduct which will be mature when adulthood is reached. It appears, therefore, that maturity is not an absolute—it is a process.

Emotional maturity is the process of acting one's age as he becomes older. The teacher should not expect children to reach a stability of interest beyond their years. He should not expect the adolescent boy consistently to be a gentleman. He should not consider it odd that freshman girls develop a crush on him. He will consider it normal for a senior girl to be "madly in love" once, twice, or thrice. In fact, when one appreciates the relative nature of maturity he achieves perspective. He will realize that what sometimes appears to be objectionable behavior is in reality a developmental stage. Pushing pupils through appropriate developmental stages too rapidly may tend to rob them of valuable experience.

Some Criteria of Emotional Maturity. Radio programs, comics, television broadcasts, and motion pictures are criticized because they depict

fearsome situations, murder, and violence. There are those who wish to eliminate these emotion-provoking stimuli by law. Such persons are not being very realistic. The public, which consists of individual persons, listens to, looks at, and pays for such entertainment (185). Until tastes change, the programs and comics will remain much the same. Besides, little proof has been assembled that these features of culture are dangerous, per se. Motion pictures and radio programs depicting violence have no adverse effect on well-adjusted children; such programs may precipitate disruptive emotions in the emotionally insecure and unstable. The problem for parents and educators is to establish goals of emotional maturity and work for their achievement. A suggested list of criteria, or goals, follows.

1. Inhibition of direct expression of negative emotions. This does not mean that one should or could suppress feelings of anger or fear. It does mean that direct attack and flight should take place less often. The school can help by providing substitute activities which permit the release of tensions.

2. Cultivation of positive, upbuilding emotions. Emotional maturity is not so much eliminating disruptive emotions as it is providing commendable substitutes. This can be fostered by experiences of success—in social contacts, in physical activities, subject-matter mastery, and the development of skills.

3. Development of higher tolerance for disagreeable circumstances. This, too, is the result of successful experience, which provides compensations for the inevitable failures and the disagreeable experiences.

4. Increasing satisfaction from socially approved responses. Growth from the natural egocentricity of childhood to the sociocentric ideal of adulthood is the result of personal success plus close association with individuals who are trusting and trustworthy.

5. Increasing independence of action. Socially oriented independence is the result of guided experience which provides degrees of freedom commensurate with one's ability to exercise judgment.

6. Ability to make a choice and not brood about other choices. This is probably best accomplished by permitting children to make choices but not allowing great stakes to depend on those choices. Heavy responsibility placed on youth may be a contributing factor to chronic worry.

7. Freedom from unreasonable fear. Fear should not be confused with concern and forethought. The experience of success and contact with confident adults foster this goal.

8. Understanding and action in accord with one's limitations. No one can be the "top man" in everything. Acceptance of one's limitations may

be fostered by widening the range of activities that are functionally recognized and praised in the school.

9. Awareness of the ability and achievement of others. Stress on group accomplishment can be a powerful source of motivation as well as a source of gratification.

10. Ability to err without feeling disgraced. This will be fostered by parents and teachers who realize that errors are educative.

11. Ability to bear victory and prestige with grace. This will grow from the equitable distribution of the experience of success and failure. Stress on cooperative activities and team and school victories will be steps in the right direction.

12. Ability to bounce back from disappointing experiences. Experience is the great teacher. But the experience must be scaled to one's developmental level.

13. The enjoyment of daily living. The opportunity to engage in challenging but achievable tasks is the major contributing factor. The exercise of mental, physical, emotional, and spiritual aspects of the human personality are the avenues to the enjoyment of living.

Since these criteria are relative they are achievable to some degree. Julian Huxley proposes that the next steps in man's evolution will not be biological but that there are infinite potentialities for increasing psychosocial understanding (133). Emotional control is basic in such development, and helping pupils unravel the mysteries of emotion gives the teacher a chance to participate in the mystery of the future.

SUMMARY

Psychological Principle	*Practical Application*
Emotions color, to some degree, all the activities of a human being.	Emotional control and direction must be an aim in teaching.
Emotion is a stirred-up state of the organism.	Intellectual development cannot be separated from physical and emotional development.
Stimuli may pile up to become acute situations.	Watch for minor irritations in pupils' lives that may lead to accumulated tensions.
Disruptive emotions are more readily experienced by tired, hungry, or ill pupils.	Teachers should be attentive to the contributing factors of emotion rather than concentrating on the precipitating situation.
Constructive emotions are facilitated by health and vigor.	School hazards to pupil tension should be detected and resolved or mitigated.
Fear is the tendency to avoid or run away.	Help pupils develop skill and become acquainted with feared situations.

Anger is the tendency to fight or attack.

Hate is a deep dislike of people or situations.

Negative emotions are valuable as a protection to the individual.

Affection is a feeling of fondness or attachment.

Sympathy is a feeling of oneness with others.

Humor is the ability to see the lighter side of life.

Projective techniques provide an avenue for the neutral release of emotions.

Emotional maturity is a relative concept. Such maturity depends on happy daily living.

Provide a good example, help develop skills, and praise exemplary conduct.

Attempt to develop the familiarity that leads to understanding.

Try to build skills and understanding that will provide protection.

Provide experience that will show pupils their identity with others.

Provide group experiences that lead to cooperative accomplishment.

Avoid sarcasm and ridicule. Use humor freely but appropriately.

Encourage free play, praise creative expression, and provide avenues for drawing, painting, etc.

School experiences should provide for some success for all facets of personality.

PROBLEMS AND EXERCISES

1. Observe a primary child for an hour. Record all his activities and expressions that seem to indicate the existence of emotion.

2. Do you agree that the feelings of a child are as important as what he knows? Why or why not?

3. *Describe some situation in which the contributing factors to emotion* have appeared to be more significant than the precipitating factor.

4. *Observe the film "Act Your Age" (see Audio-Visual Material, p. 314)* and discuss its implications for teachers.

5. Evaluate the statement "The tendency toward anger is strengthened by its frequent exercise."

6. Defend the proposition that negative emotions should be eliminated from one's behavior pattern.

7. Describe some family you have observed in which affection is evident. List the elements in the living pattern you think have contributed to the feeling.

8. What do you think is meant by the expression "maudlin sympathy"? What are its dangers in the school situation?

9. Have three class members observe classes at the primary, upper grade and high school levels and report to your class the circumstances that seemed to arouse humor at each level.

10. *Make a list of activities at a particular grade level (primary, upper grade,* or high school) to utilize the advantages of projective techniques.

SUGGESTED ADDITIONAL READINGS

"Fostering Security and Satisfaction," in *Toward Better Teaching*, Washington: Association for Supervision and Curriculum Development, National Education Association, 1949, pp. 13–49.

This chapter deals with the importance of developing skills, discovering special needs, and satisfying fundamental needs of children.

Hymes, James L., Jr., *A Pound of Prevention,* New York: New York Committee on Mental Hygiene of the State Charities Aid Association, 1947.

The subtitle of this booklet suggests its important message: "How Teachers Can Meet the Emotional Needs of Young Children." We must know the child, avoid anger and criticism in our own thoughts and actions, and provide opportunities for youngsters to express their feelings through play, writing, and art activities.

Hymes, James L., Jr., *Teacher Listen—The Children Speak . . . ,* New York: New York Committee on Mental Hygiene of the State Charities Aid Association, 1949.

This booklet emphasizes the importance of being a good listener. The reiterated message is, "Pick up your ears and listen."

Menninger, William C., *Understanding Yourself* (Life Adjustment Booklet), Chicago: Science Research Associates, Inc., 1948.

This clearly written and well-illustrated booklet is designed to help the adolescent understand the source of his own motivations and feelings.

AUDIO-VISUAL MATERIAL

Act Your Age, Coronet Films, Inc., 65 East South Water, Chicago 1 (18 min, BW or C, sd.)

Infantile behavior—temper, crying, pouting—and the reasons for the continuance of these behaviors into adolescence are shown.

Children's Emotions, McGraw-Hill Book Company, Inc., 330 West 42d St., New York 36. (22 min, BW, sd.)

Shows the major emotions of childhood. The narrator points out that the principal characteristics of children's emotions are intensity and frequency, though they are of short duration.

Emotional Health, McGraw-Hill. (20 min, BW, sd.)

A young man with ailments for which the school doctor could find no physical cause is sent to a psychiatrist and through discussion comes to understand the basis of psychosomatic illness.

The Other Fellow's Feelings, Young America Films, Inc., 18 East 41st St., New York 17. (10 min, BW, sd.)

Thoughtless teasing by a boy causes acute emotional disturbance on the part of a girl. A good basis for discussion is supplied.

17

THE NATURE AND DIRECTION OF HABITS

EDUCATION is designed to bring about better adjustment of individuals. Among the innumerable ways in which persons effect adjustment must be considered the formation of habits. All of us are, to a marked extent, creatures of habit. It will behoove us to understand the nature and role of habits so that we may direct them instead of allowing them to control us. We speak of habits of study, of emotional control, and of habitual attitudes, realizing that these are modes of behavior developed by the individual. The habits we form either help or hamper our adjustment.

Young people have been advised for ages to be careful because they inevitably become "walking bundles of habits." This is good advice for the college student, and it is a warning to prospective teachers to direct the habits their pupils are daily forming. The consistency of personality traits is due to the fact that responses are built into the organism in the form of habits.

THE ROLE OF HABITS

Habits Make for Economy of Action. If it were not for habits the day would scarcely be long enough. If every action from arising, dressing, getting washed, and preparing breakfast had to be consciously planned and separately executed, we would be clumsy, indecisive, and slow. The words we speak are habitually attached to rather definite meanings and objects—habits of word usage thus make communication possible. The mental habits that pupils are forming daily enable them to build on past activities. There is a steady stream of adjustive actions which stem from habits.

Habits May Hamper Adjustment. The negative aspect of habits often receives more attention than does the advantageous aspect. Children can and often do form habits of dilatoriness, temper, carelessness, and procrastination. Unfortunately, the plastic nature of the individual enables him to adjust to these handicapping habits and to live with them. The theory that as growth proceeds the individual becomes more like himself has its

implications for nonadjustive habits as well as for the habits which make for economy of action (252, p. 48). A thorough knowledge of the insidious nature of habits will cause teachers to observe conduct while it is still in the formative stages.

Habits Play a Paradoxical Role. So-called "good habits" may be carried so far as to become of questionable value. Babies may form such stereotyped habits of going to bed that any change in the routine will upset them. School children may become so habituated to a particular class group that their removal from the group becomes a major catastrophe. Reading is, in general, a laudable habit, but some children have developed it to such a degree that it interferes with normal participation in outdoor play activities. There must, in brief, be moderation in the extent to which even "good" habits are maintained. Those in charge of the development of youngsters should see to it that there is enough variation in methods and materials, even within a routine framework, to maintain a fundamental plasticity of adjustment. It is a matter of making habits our servants instead of becoming the slaves of habit.

MEANING AND KINDS OF HABITS

A Concept of Habit. Habit is one of many names that is given to a not too sharply delineated class of learning. The basic feature of the habit is its automatic nature: A particular response has been so frequently and consistently repeated that when the individual is again placed in the same, or a similar, situation the response is automatically activated. A school child may develop the habit of inattention merely because there is relatively little reason to give attention. He may, on the other hand, consciously set out to establish a response to certain arithmetical combinations so that in similar situations he can respond quickly and accurately. In either case, the factor of automaticity is predominant. Therefore, habit may be defined as a more or less automatic, learned response, acquired through repeated responses, within an identical or highly similar situation.

The student of educational psychology should be careful to give as much stress to the situational aspect of habit as he gives to the repetition aspect, because teachers, by their manipulation and alteration of the situation, direct the habit formation of pupils. Teachers cannot always force pupils to repeat actions to the point of habit formation, but they can reinforce desirable responses that can be consolidated into time-saving habits by employing recognition and praise.

Habits and Conditioning. Habit is a form of learning; therefore, the factors mentioned in the chapter on Factors Which Facilitate Learning are pertinent as we consider the steps in habit formation. It has been shown that conditioning consists of substituting a new stimulus for a

previous stimulus that elicited a given response. School children engaged in a number of diverse activities will become conditioned to quieting down when the teacher takes a certain position in front of the room and looks at the pupils expectantly.

The explanation of habit formation by conditioning would be sufficient if the responder were not a living organism. It is of utmost significance for teachers to bear in mind that pupils are not automatons. Thus, one step in habit formation is to consider the matter of motivation. For adequate understanding, the formula $S \rightarrow R$ must be changed to $S \rightarrow O \rightarrow R$. The organism is taken into account by dealing with goals and motives.

Still another relationship of habit, organism, and conditioning is that the organism without the habit is different from the organism with the habit. This might be illustrated by $S \leftrightarrows O \rightleftarrows R$; *i.e.*, the organism with a given habit gives a different response to a stimulus from the one it would give if it did not have the habit. Explanations given in arithmetic are different when the pupils are thoroughly acquainted with number combinations from explanations given when they are unfamiliar with such combinations. Children with the habit of attending to the instructions of teachers are different from those who have not acquired such habits. Thus, conditioning illustrates the fact that responses are built into the organism. This explanation can have wide implications for educators, for it means that teachers play a part in the process of maturation that is called "readiness for learning" (154, pp. 69f.).

Although a characteristic feature of habit is automaticity, it is more than a simple mechanical process. The repetition which is needed in establishing a habit necessarily involves a living being. In reading, habit helps the individual more readily perceive certain combinations of letters as spelling the word "house." However, the kind of house visualized by two pupils may be quite different. Two people reading the same passage get different meanings from what they read. Two people hearing a teacher's statement interpret the statement in different manners. Having once responded, the organism is changed and henceforth will see its world in a somewhat different light. The stimulus that is selected from the entire range presented by the world is again dependent upon the changed organism. Thus, a given student may be habitually obedient, but the degree of obedience will vary with individual teachers in different situations.

This lack of complete automaticity in habit formation indicates that the teacher's job is more than mere repetition of desirable learning. The multiplication tables should be presented in varied ways and used in the solution of many different kinds of problems—*e.g.*, as single entities, in different combinations, in division, and in multiplication. In addition to

drill there must be explanations, discussions, and illustrations. The motivation of the pupil and the timeliness of the problems must also be considered.

Skill habits are only one part of the learning process. For example, there are regular developmental trends in arithmetic which parallel mental development. Teachers who see to it that each child is prepared for the next step by having completed the preceding steps, will have their work facilitated (135). Skill in numbers is more than habits of counting, writing numbers, and using numbers in combinations. It also involves knowing what the processes mean and when to use them. You have all met youngsters who could count to 25 but could not tell you how many coins you have placed on a table. The story of the boy who wrote "I have gone" on the board a hundred times and then left the note: "Teacher, I have written 'I have gone' a hundred times and I have went home" is not simply a joke. Children do "call words" aloud from a primer without comprehending the story. Algebra problems may be learned without comprehension. Poetry may be memorized without appreciation. It is obvious that the repetition that produces conditioning, and habit, is only a part of the learning situation.

Permanence of Habits. Although habits tend to shape the course of subsequent development, change is continuous. Habits tend to persist not in the form of identical response but in terms of similarity of response. Inevitably the individual grows and changes and environmental circumstances are shifting. All of us have had the experience of finding some error in typing, swimming, or golfing that crept into the action unperceived.

The reason for the permanence of habits is that the responses are built into the organism. The ease with which some things are relearned after having apparently been forgotten afford support for the statement that nothing is ever completely forgotten. "The organism is different by the new response and all that it brings. Each act of learning adds a certain change and increment to the very structure of the organism itself. Learning thus involves two aspects: one creative, in which a new response is contrived; the other conserving, in which this newly contrived response is added to the very structure of the organism." [1]

Motives and Habits. Habitual responses may become motives. This point is sharply emphasized with regard to habits in the concept of "functional autonomy" (1, p. 196). Habits are formed as the result of motivation—they are acquired to help the individual solve some problem of adjustment. Later, even if the original motivation is altered, the habitual

[1] William Heard Kilpatrick, *A Reconstructed Theory of the Educative Process*, New York: Bureau of Publications, Teachers College, Columbia University, 1935. p. 4.

response has become such an integral part of the organism that the response persists without external motivation. The habit has become its own force of motivation. Thus, a child may work hard to develop the skill habits necessary for reading. Once acquired, the skill becomes in and of itself a source of stimulation. Other examples are playing tennis, performing on a musical instrument, knitting, manipulating figures, smoking, and choosing food. This functional autonomy is of major importance in explaining the permanence of habits. It must be recognized in programs devoted to the alteration of habit patterns.

James Mursell questions the validity of the concept of functional autonomy. He believes that an interest becomes autonomous because the individual sees more in the activity through his continued pursuit of it (201, p. 105). Too often the inner drives of the pupil conflict with the motivations which we try to establish for schoolwork. Those who seek to help young people form good habits will find their work most effective when they take the aims of the learner into consideration.

In the next few years, you will hear people criticize the schools because they neglect to drill pupils on fundamentals. "The children today can't spell or do arithmetic," is a charge you may be called upon to answer. But one must be careful not to subscribe to the "fallacy of the excluded middle." This is not a case in which opposite poles must be defended. Teachers today do stress drill and habit formation in numbers, spelling, and expression. They do not strive for verbalizations which go beyond understanding—as does the mother of the three-year-old who says, "Betty can count to twenty." The fact is that Betty can *name numbers* up to twenty but *cannot count* four coins. Teachers who realize this discrepancy between rote learning (habit) and understanding first strive for understanding. Then the alphabet and multiplication tables and algebraic formulaes can be memorized—built into habits—for the sake of economy in future effort.

Motivation (the learner's inner purposes) is a part of the formation of advantageous habits. Soldiers and sailors may learn "good housekeeping habits" while they are in military service, but unless their ideals and aspirations change those habits will fail to function in civilian life. If the teacher will bear in mind this aspect of motivation as he attempts to direct the formation and re-formation of habits, he will be much more successful than if he depends on drill alone.

Physical Habits. It is only for the sake of discussion that habits are placed in physical, mental, or emotional categories. Even those skills which seem to be primarily physical have mental and emotional aspects. It is obvious that the lecture method will not suffice in teaching a child to write. But since practice will consolidate inefficient movements as well as effective ones it is important that errors be detected as early as

possible and that corrective steps be taken immediately. There are those who believe that it is often easier to teach "from scratch" than to correct errors after they have been incorporated into the reaction pattern. However, many children do have preschool training, in writing and reading, for instance. We can only say that the sooner remedial work is instigated and the more consistently correct responses are required the more effective the guidance of learning will be.

One of the important physical habits to which teachers are justifiably attentive is posture. If attention is not given to such matters as holding a book properly, keeping a given distance from writing, sitting straight, and standing and walking erectly, habits will be formed that become increasingly difficult to correct. Just as a child learns to live with defective sight or poor hearing, so too does he learn to live with the handicap of poor posture. A cramped physical position may affect circulation, digestion, and even the functioning of the nervous system (192, p. 87). Consistently calling attention to poor posture in a kindly manner can help prevent such handicaps. However, it must be recognized that although poor posture is sometimes simply a matter of improper habits, there are often other factors that lead to the condition, such as defective vision or ill-fitting desks and chairs.

The theory that personality trends are reflected in posture is supported by research, which indicates that certain body movements and positions (sighing, coughing, blinking, etc.) are a kind of nonverbalized communication (51). Husbands and wives, twins, and siblings are sometimes adept at interpreting one another's mental-emotional habits of movement and posture. Students of personality indicate that one's feelings about himself are reflected in his habitual posture and bodily carriage. The shy person may assume a drooping posture and slinking movement, or he may assume an erect, cocky posture to hide his feelings. The healthy, confident individual usually has a balanced posture and rhythmic movement. James L. Hymes, Jr., asks teachers to become aware of the "language of behavior" of children and cautiously try to interpret it (134).

Improvement of posture calls for an attempt to understand motivations and to correct the basic causes—including feelings of inferiority or inadequacy. This will be a responsibility of all teachers but is of particular concern to upper grade and high school teachers. Often it will be necessary to bring about a change of the pupil's attitude toward himself by both direct teaching and indirect suggestion. This is often an extremely difficult problem for teachers of those adolescents who have fixed ideas about their size, shape, and appearance that are not founded on fact (253, pp. 80*f.*).

Mental Habits. The facility with which one adjusts to environmental factors depends upon his capacity and also upon the consistency with which he uses that capacity. Upon his habits of thinking and of applying himself to the task at hand and his characteristic determination depends his successful adjustment. "Among the permanent factors [which shape attention] are the individual's *habits of attention and inattention.* He has learned to attend to certain things and to disregard other things. . . . Habits of attention and inattention are established by the child through the influence of older people who point out to him what they regard as worth noticing." [2] Thus, in a very real sense, one's habits determine the type of person one will be.

Two implications for teachers immediately become apparent. First, it is entirely justifiable to demand attention. If we were to permit the child to pay attention only when it suited his fancy he would have little chance to gain the interest that would make attention easy. Second, efforts should be made to make the subject to which we wish attention to be directed attractive. Vividness, change, and personal significance are factors which make it easier to give attention.

A mental habit the secondary school teacher should seek to develop in his pupils is that of working with a time schedule. This will be particularly important to the 15 or 20 per cent who go on to college, but it can also have marked value for all those who seldom seem to find time to do all the things they want to do. Planning is an essential feature of the time schedule. If the teacher helps pupils make one for their immediate use, he will be pointing the way to a better use of time in college as well as in the workaday world. Many who will not go to college need to learn to organize their time, not necessarily in their work because that is often so routine that individual organization is unnecessary, but in order to live a full and varied life. It is worthwhile for everyone to find, by planning, time for many interests.

One criticism of education and teaching is that pupils are not taught how to think. There are undoubtedly many reasons why pupils do not think, and certainly one of them is that both teachers and pupils are too eager to get answers.

> Human energy is never more extravagantly wasted than in the persistent effort to answer conclusively questions that are vague and meaningless. Probably the most impressive indictment that can be made of our educational system is that it provides the student with answers, but it is poorly designed to provide him with skill in the asking of questions that are effectively directive of inquiry and evaluation. It teaches the student to "make

[2] Robert S. Woodworth and Donald G. Marquis, *Psychology*, 5th ed., New York: Henry Holt and Company, Inc., 1947, p. 406.

up his mind," ready or not, but it does not teach him how to change it effectively. Any attempt to improve our educational system that does not involve a clear recognition of this defect of it can hardly be expected to lead to substantial reform. In fact, any attempt to reeducate a maladjusted individual that does not leave him with effective techniques of inquiry cannot be trusted to result in substantial and lasting benefits.[3]

A valid starting point for forming the mental habit of thinking would be to encourage questions. This includes not only the questions asked by the teacher but also those raised by pupils. Moreover, "sticking to the subject" should not constitute a barrier to the consideration of related topics.

Emotional Habits. Attitudes can be used to illustrate a third broad, and overlapping, class of habits. An attitude may be defined as a predisposition to action. Like other kinds of learning, attitudes are specific to a situation. A child may be tolerant of a newcomer in the group but intolerant of manifestations of poor sportsmanship. He may be industrious in art activities but dilatory in academic work. Furthermore, though we have classed attitudes as emotional habits, it must be remembered that attitudes are the result of experience and consequently contain intellectual aspects.

In a study of prisoners, designed to test the assumption that good habits would make good citizens, training was given in hygiene, development of work habits, and sharing gains with one's family. Follow-up studies indicated that training itself was not enough. It was also necessary to change interests and ideals. The prisoner antagonistic to the training reverted to his criminal habits. But when attitudes and goals were modified the results were more gratifying (1, p. 263). This datum supports the assertion made earlier that one's feelings are very much a part of the educational situation.

Although attitudes are specific, they have a tendency to spread. Hence, teachers should commend manifestations of desirable attitudes, show how such attitudes can be applied in other situations, and thus encourage their spread. However, one cannot be content with a rational approach to attitudes—direct experience should also be enlisted. Thus, for children who manifest racial intolerance, it will be well to seek opportunities for them to become acquainted with members of various races. When a pupil displays a negative attitude toward reading it will be necessary to provide him with gratifying experiences in what little reading he does. He should be given books of appropriate difficulty and specific interest and the opportunity to tell the story or answer questions about it.

Another important factor in dealing with attitudes is the view that

[3] Wendell Johnson, *People in Quandaries,* New York: Harper and Brothers, 1946, p. 55.

people take toward them. Both teachers and pupils should realize that attitudes change, though frequently the change is almost imperceptible. A study of mathematics and habits of industry has thrown light on the persistence of attitudes. It was found that when students were equated on the basis of "mathematical brightness" the achievement was greater among the more industrious. Moreover, the brighter pupils lost more by indolence than did the less bright. The study concluded that it would be well to advise the mathematics pupil, bright or slow, to avoid forming attitudes that will lead to indolence (161).

Clearly, there is the possibility of shaping attitudes that will facilitate adjustment, especially in the early years. Teachers must realize that one of their significant responsibilities is to discover their pupils' attitudes, determine the attitudes most desirable in the long run, and formulate techniques for shaping good mental habits.

STEPS IN HABIT FORMATION

The Importance of Goals. Previous discussion has emphasized the importance of goals in learning. For economy of learning, purposeful behavior is desired. However, since children in their early years have a tendency to live in and for the present, long-term goals are likely to have little meaning. Goals for youngsters must be immediate and real. As the pupil grows older, long-term goals come to have meaning. Thus, occasional reference to the long-term goals of habit formation for youngsters, and additional stress on them for pupils of greater maturity, can develop the tendency to evaluate present activities in terms of later significance.

For pupils of high school age, it is advantageous to discuss with them the nature and formation of habits. Discussions about the significance of goals and of the other steps in habit formation will help them to develop consistent approaches to habit formation. Secondary school teachers report that they have found discussion techniques invaluable in determining vocational goals and life-adjustment goals, and in evaluating ethical ideals. It cannot be expected that all pupils will accept the goals which are discussed, but for at least a few such discussion is a step forward (258). All pupils should realize that habit formation goes forward by small steps and that improvement in any area is the result of much practice and evaluation.

Beginning with Vigor. Beginning teachers as well as experienced ones would do well to apply educational psychology on the first day of school, when it is common practice to shorten class periods and spend a few minutes checking enrollment and attendance details. These details are not the objective of education. They should be subordinated to the task at hand, which is to set forth the aims of the schoolwork. Even in a

curtailed period it will be advantageous to give the students the idea that vital work is going to take place. The teacher may ask questions relating to the work, discuss some of the objectives and make an assignment (except perhaps in the primary grades). This businesslike approach will immediately create the impression that something significant is going to take place on subsequent days. As James has so fittingly expressed it, "Every smallest stroke of virtue or vice leaves its never-so-little scar" (138, p. 77). Since we want to establish habits of industry, application, seriousness, concentration, and attention it is advisable to begin at once.

The first day is not the only time for the vigorous approach. Every new unit or new objective should be introduced with enthusiasm. If, for instance, the teacher has introduced neatness as an objective, he should insist that pupils immediately practice it. Kindly reprimands and appropriate praise both have their place in launching the new effort with vigor. "A journey of a thousand miles begins with the first step."

Maintain the Effort with Consistency. The first step, whether in habit formation or any other pursuit, *is only the first step.* Many people neglect to maintain the effort consistently, and presently their old habits of neglect, procrastination, and haste begin to creep back into their behavior.

Habit formation, we have seen, is an outcome of two major aspects, motivation and repetition. Determining to build new habits is only part of the process. There must be repetition. Thus, in our example of neatness, discussion and illustration must be followed with reminders of the need for consistent effort.

Among the numerous factors in a salutary program of pupil development one of the more important is consistency. Since many environmental stimulations cannot be readily controlled it is important that consistency inhere wherever possible (175, p. 228). Children need and prefer consistent and deserved discipline. It gives them a feeling of security. Studies repeatedly show that good child and adolescent adjustment is associated with consistent and even strict discipline (217). It is inconsistency or lack of routinization that is frequently disturbing.

While considering the role of consistency in habit formation, we should observe that routine must not be carried so far as to result in mere training. It may be that the child can conform to rigid requirements, but perhaps at the cost of failure to develop healthy initiative. Emphasis on habit formation may not be dangerous, but it can be futile. Much of the training that goes on in nursery school, for instance, is not permanent gain. The skills the pupil achieves are quickly lost with disuse and are no more readily relearned than they are by a pupil who is learning the skill for the first time (127). Too much stress on the learning of facts may either (1) push learning beyond maturational levels required for understanding, or (2) neglect problem solving, creative activities, and

social adjustment. A consistent program that leads to advantageous habit formation is a *matter of teacher judgment.* Broad outlines of consistency do not necessarily mean that variations in procedure are not essential.

Adopt a Positive Program. Much of the effort to alter habits is rendered more difficult when nothing better is substituted. Thus, if we are working to reduce vocalization in reading, it is not sufficient to point out that it is a bad habit. The advice "Try to stop vocalizing" will often result in additional confusion. The emphasis should be on getting meaning from the printed material; *therefore, the teacher should stress improving reading speed and encourage vocabulary building so that the need to sound words becomes unnecessary.*

The teacher should stress the positive rather than the negative. Instead of shaming pupils to get rid of a habit, teachers should encourage them when they occasionally manifest a better habit. An excellent illustration of "accent on the positive" in the schools is provided in speech-correction work. The teacher is advised not to call attention to the defect but to stress the desirable pattern. He is also advised to avoid labeling the child a stutterer *but to accept his speech as a natural way for the child to express himself.*

> A child who directly or indirectly is continuously advised, criticized, or corrected, "hounded" or ridiculed about his speech may pass from the characteristic simple repetitions of the growing child into stuttering . . . .
>
> You can do much to prevent the appearance of strain or struggle in your child's natural tendencies to repeat and hesitate in speaking—or to relieve or reduce strain and struggle if they have already appeared. You can do this best by accepting your child's speech as potentially normal and by relieving or reducing the anxieties, tensions, and pressures that surround him. This is the way to help him to smoother, easier speech—not by worrying or drawing attention to the way he talks.[4]

It has often been noted in studies of stutterers that their speech appears to be normal in some situations and for brief periods. *These situations* occur when the individual gets his mind off himself and his speech difficulty. It is a fundamental tenet of successful work with exceptional children of all types that they be made to feel they are an important and integral part of the group. The teacher's task is to discover, or develop, some skill or knowledge that will allow the pupil to make a recognized contribution. This will generate respect from others and instill self-confidence. This advice applies whether the problem is one of stuttering or any other undesirable behavior—the accent should be on the positive.

[4] Leon Lassers, *8 Keys to Normal Speech and Child Adjustment*, Salem, Oreg: Oregon State Department of Education, 1949. pp. 24–25.

Permit No Exceptions. Closely allied to suggestions for consistency is that of permitting no exceptions to the exercise of the desired activity, particularly in the early stages. "Each lapse is like the letting fall of a ball of string which one is carefully winding up: a single slip undoes more than a great many turns will wind again. Continuity of training is the great means of making the nervous system act infallibly right (138, p. 69). The pupil may be trying to establish the habit of brushing his teeth regularly. If he is encouraged and allowed no exceptions he begins to maintain the habit. If one is trying to practice on improved reading ten minutes a day the successive number of practice sessions is a stimulus, because the reader wants to maintain the record. But if he allows an exception, the next day he is likely to say, "What's the use? I've already broken my resolve."

This suggestion has its roots in psychological fact. The role of repetition in the process of conditioning is of great importance. The fact that motivation is strengthened by the experience of success has been noted in many different situations. Functional autonomy (carrying on an act because it is self-motivating) is more likely to be established by consistently applied effort. The element of recency—the more recently a stimulus-response has been exercised the stronger the act becomes—must also be considered important.

THE ROLE OF "WILL POWER" IN HABIT FORMATION

The Meaning of "Will Power." Mention of "will power" is made more frequently in popular discussions of psychology than in standard textbooks. The reason for the diminished use of the term is the feeling that it really explains nothing and that the factors underlying "will power" are more basic. These factors include intelligence, past experiences, auxiliary habits, and motivation. If, therefore, we wish to use the term we must also indicate its constituents, namely, motive and foresight.

Strengthening the Will to Do. When it is said of a person that "he has great will power" it is often implied that he was born with the characteristic—that it is innate. As a matter of fact, will power is developed through experience. One must have the intelligence and experience to foresee the results of his proposed actions and anticipate difficulties. However, experience will prove that the difficulties are more than counterbalanced by the satisfaction derived from success. The inconveniences are then considered incidental to the successful attainment of the goal. This idea may be clarified by the law of least action: "When action is defined as units of energy multiplied by units of time, movement occurs from one position to the other, over the shortest possible route" (285, p. 40). This statement may be paraphrased by saying that an individual will al-

ways take what he perceives to be the shortest (easiest) route to his goal. However, true perception of the shortest route is not always clear and complete. The statement "I can stop smoking if I want to" is often heard and is no doubt true. The basic problem is to make the desire to stop more powerful than the attractions of smoking.

Capitalizing on Will Power in the School. It is obvious that the teacher cannot depend upon will power to create new and desirable habits. If pupils are to establish habits of physical hygiene, neatness in work, and persistent application, definite factors must be present.

1. The new act must be rewarding. The pupil must feel a glow of satisfaction from coming to school neat and clean. He must be proud of the condition of the classroom or of his paper.

2. Praise must be forthcoming for commendable effort. Praise is secondary to the rewards inherent in the accomplishment of the task, but it is a further stimulus for continuing the act.

3. The goal must be clearly seen. This can be facilitated by explanations by the teacher of the nature and purpose of the act. Discussions of the importance of cleanliness, neatness, or application can strengthen the pupil's resolve.

4. Explanation of the probable results should be accompanied by a discussion of obstacles that are likely to be encountered. The pupils will profit from warnings against the temptations to deviate from the desirable practice.

5. The pupils should know that growth is a slow process and that the establishment of commendable habits will take many separate acts and persistent repetition.

SUMMARY

Psychological Principle	*Practical Application*
Man, poorly equipped with "instinctive" acts, is a creature of habit.	Teachers should aim at the creation of habits that will aid adjustment.
"Good" habits may become so impelling that adjustment is hampered.	Education must include emphasis on flexibility.
Habits tend to be, but are not completely, automatic responses.	A desirable habit should be practiced in many and varied situations.
Conditioning plays a major role in the establishment of a habit.	Meaningful repetition coupled with motivation deserve attention.
Habits are built into the organic structure of the individual.	Dubious responses should be corrected or eliminated promptly.
Habits can and do become motives for future conduct.	Teachers must be constantly alert to the kinds of habits being formed.
Practice does not make perfect—it consolidates the response made.	Practice should be "correct" and should be directed to improvement.
Habits are mental as well as physical in nature.	Attitudes, ideals, and goals must be direct aims of education.

A step in habit formation is to see the goal clearly.

Getting the right start provides incentive for continued effort.

Consistency of action is essential to habit formation.

Substitution is more effective than elimination.

Permitting exceptions weakens the resolve as well as the response.

"Will power" is largely a matter of making the new response more attractive than the old one.

Teachers should repeatedly reveal the ultimate and immediate aims of all school activities.

New projects and activities should be attacked with vigor and confidence.

Lapses of effort must be strictly avoided.

Emphasis should be on doing rather than upon *not* doing.

Teachers must periodically find ways to reinforce motivation.

Teachers should seek ways to increase satisfaction in the performance of new habits.

PROBLEMS AND EXERCISES

1. How would you proceed to make primary pupils realize that they will soon become "walking bundles of habits"? How would you accomplish this in the upper elementary grades? In high school?
2. Suggest a number of specific habits that make for economy of effort in academic pursuits? What are some habits that tend to waste effort?
3. Cite some illustrations, from your own experience, that illustrate the statement that good habits may become a hindrance to adjustment.
4. What do you think Kilpatrick means by the statement ". . . This newly contrived response is added to the very structure of the organism"?
5. Observe some intermediate youngsters in school or at play and see whether you can find any evidence of "functional autonomy."
6. Would you consider it better for a beginning golfer to have several lessons before he begins to play at all or to have the lessons after shooting a few experimental rounds? Discuss this with your classmates to see whether there is any unanimity of opinion.
7. Observe a high school class at work and then suggest a number of attitudes which you feel should receive the attention of the teacher.
8. In trying to teach upper grade students good work habits how might you capitalize on the steps suggested for forming habits?
9. How could you use self-imposed penalties on yourself in maintaining a time schedule?
10. Cite five or six illustrations of the need for a positive program in helping primary youngsters break such habits as thumb sucking, stuttering, chewing pencils, etc.

SUGGESTED ADDITIONAL READINGS

Dewey, John, *Human Nature and Conduct*, New York: The Modern Library Series, Random House, 1922, pp. 14–42.

In these two chapters the author describes how habits function in social relations and discusses the nature and meaning of will. He shows that character is a matter of habits and indicates that a habit does not of necessity involve repetition.

James, William, "The Laws of Habit," *Talks to Teachers on Psychology*, New York: Henry Holt and Company, Inc., 1899 (new ed., 1939), pp. 64–78.

This chapter presents positive suggestions for the forming and breaking of habits and provides illustrations for their application. Even though written half a century ago, the author's remarks are highly pertinent today.

Mikesell, William H., *Mental Hygiene*, New York: Prentice-Hall, Inc., 1939, pp. 1–46.

The author begins his discussion of mental hygiene by showing the pervasive influence of habits on daily conduct. He describes the advantages and disadvantages of habits and discusses the merits and shortcomings of various "methods" of forming and breaking them.

Munn, Norman L., *Psychology*, Boston: Houghton Mifflin Company, 1946, pp. 199–220.

In this chapter emphasis is placed on the fact that man is a creature of habit. Frequently, what appears to be an instinct is really a thoroughly learned habit.

AUDIO-VISUAL MATERIAL

Maintaining Classroom Discipline, McGraw-Hill Book Company, Inc., 330 West 42d St., New York 36. (14 min, BW, sd.)

This film shows undesirable disciplinary techniques and indicates constructive approaches for securing proper conduct and commendable attitudes.

Overdependency, McGraw-Hill. (32 min, BW, sd.)

This is the case history of a young man whose life is crippled by behavior patterns carried over from a too-dependent childhood. He finds difficulty in facing everyday problems and seeks refuge in illness and the solicitude of his mother, sister, and wife.

18

CULTURAL INFLUENCES— THE ROLE OF THE SOCIAL SETTING

IN THE FIELD of educational psychology the study of the individual as a physical and physiological organism is shifting to the study of the individual as a social creature. Although physical factors are still considered important, the pervasiveness of cultural factors is more clearly recognized. This shift recognizes the growth principle. It is becoming more widely recognized that an adequate understanding of pupils can scarcely be achieved without knowing something about the families, communities, and social classes which shape their thinking, habits, and actions.

The study of social influences is difficult because teachers tend to assume that the cultural background of their students is the same as their own. Furthermore, cultural influences are hard to understand because of our tendency to think of America as a land of rather homogeneous people with common traits and attitudes. Actually, it might be more fruitful to think of the *differences* which exist between a group of pupils in one area and those of another. The motivation, discipline, and teaching problems of a teacher in Brooklyn will be considerably different from those of a teacher in Montana. Attitudes encountered in pupils in Georgia may be considerably different from those held by pupils in up-state New York. Moreover, within these contrasting communities will be large differences in socioeconomic status. These contrasts are just as important psychological factors as are body chemistry and inherited potential for learning (58, p. 37).

It is impossible within the limitations of this chapter to discuss in detail the effect of differential cultural impact. Entire books have been written about communities and the contrasts found within them.[1] It is hoped that the limited discussion here will help make the teacher aware

[1] See Suggested Additional Readings at the end of this chapter. It is suggested that students be assigned to read and give reports on some of these books, pointing out the psychological and educational import of the materials presented by the authors.

of the danger of thinking in terms of "typical" pupils and encourage them to make a careful study of the community in which they live and teach.

CONTRASTS BETWEEN COMMUNITIES

Children in Greenwich Village. In her study[2] Claudia Lewis makes it clear that it would be a mistake to think of a typical family or a typical child in Greenwich Village but says that if the families were averaged and the children were averaged certain trends would be indicated.

> . . . Their families scarcely could be called a homogeneous group in any simple racial, religious, or cultural sense. If there are any brothers or sisters in the family, it is seldom more than one. Frequently both parents are engaged in professional work as a matter of choice—statistics for one recent year showed that 69 per cent of the mothers worked outside of the home—making it necessary to turn the children over to maids in the after-school hours. Family incomes, ranging from $3,500 to $6,000, are usually adequate to provide for good health, though living quarters in Village apartments are anything but spacious.
>
> A few of the children are adopted, and a few come from homes where parents are separated or have remarried, but actual count shows that the percentage of such children is probably smaller than commonly supposed—only about 12 per cent on the average.
>
> In short, then, these are the children of a professional group living in Greenwich Village, and the fact that they are enrolled in the Harriet Johnson Nursery School usually indicates an intelligent and devoted interest in their development on the part of their parents.

As far as the teacher is concerned, the importance of the family and its way of living lies in the effects on the children. Hence, we turn to a word picture[3] of the children who attend the Harriet Johnson Nursery School.

> Can we sum up in a sentence what we mean by "the children in the Harriet Johnson Nursery School"?
>
> Perhaps first of all we think of them as beautifully robust, healthy children with sturdy bodies. Almost simultaneously we think of them as very vocal children. They talk clearly, constantly, copiously, with a facility and pace that is paralleled only by their muscular activity in general. Harriet Johnson children seem never still for long. They must be running, rushing, hopping, jumping, twisting, turning, most of the time . . . . Indeed, the very troubles that arise among the children are hardly to be separated from the idea of social activity and the working out of social techniques through

[2] Claudia Lewis, *Children of the Cumberland*, New York: Columbia University Press, 1946, p. 6.

[3] *Ibid.*, pp. 22–25

this activity. Nor can they be separated from the picture of intensity with which these children approach every part of their world. They are intense in their play, their anger, their enthusiasms.

That these are gifted children of a high level of intelligence is evident even without the IQ scores to corroborate the fact. Their awareness is keen, their curiosity in the world about them eager and strong . . . .

Needless to say, teaching such children is something of a strenuous adventure in ingenuity and patience, a vigorous exercise in skill of understanding, in ability to turn what might be chaos into something more calm. The rebels must be helped through their rebellion. Destructiveness, when it goes out of healthy bounds, must be channeled into constructiveness through the vital and interesting play opportunities, materials, and ideas presented to the children, as well as through the warm, solid, bolstering relation of friendliness and understanding that is established with them.

Of course, regardless of the locale, it is necessary for the teacher to exercise patience and ingenuity. No matter what the home and occupational life of the parents may be, understanding children is necessary. Children from any neighborhood will feel the spirit of rebellion, though they may characteristically manifest it in varying ways. Simple friendliness is a characteristic behavior we should like to see in all classrooms. But the exercise of patience, ingenuity, friendliness, and understanding will differ with the community. This may be seen by considering Claudia Lewis's experiences in another community.

Children in the Summerville Nursery School. Miss Lewis spent two and one-half years teaching in a nursery school for mountain children in Tennessee. Here, too, there were marked differences between children, but there were also characteristics that set them off from other groups with which she had worked. The mountain children were shy and quiet. Their response to teacher suggestions was slow, though they seemed to be happy and interested in *what the teacher was doing.* Screaming and shouting occurred with less frequency and intensity than had been noted in the Greenwich Village School. Temper tantrums were infrequent. There was consideraby less speech facility. Their play was repetitive and relatively unimaginative. Interpersonal aggression was infrequent, and direct attacks upon the teacher were extremely rare (only two or three such occurrences in the time she was with them). Stanford-Binet scores were markedly low on the sections dealing with language usage. The pupils were interested in art activities, such as painting, drawing, and modeling, but the products were crude. She noted, however, that these children passed through the same developmental stages as the Greenwich Village children. The health of these children was not robust. Running noses and open mouths suggested bad tonsils. Sores and rashes were common.

Some of the differences may appear to be a matter of degree. The mountain children probably have less physical energy than the Harriet Johnson children—a fact which may to a large measure explain their comparative inactivity, comparative peacefulness. Likewise, IQ scores of the two groups would seem to indicate, on the surface at least, that there is a considerably lower level of intelligence among the mountain children—though this is dangerous ground to tread on. We have no way of knowing what would happen to the IQ of a mountain child who grew up in the stimulating environment pressing upon the New York child at every turn.

We have seen that Cumberland mountain children can develop some of the same kind of creative originality that distinguishes the Harriet Johnson children so markedly. Even Cumberland mountain children, so shy in the beginning, can become very noisy, can giggle now and then over "dirty" words, can boast toughly of their powers to kill and shoot, can sometimes fight and hit each other for what they want, can gang up against certain of their peers, can rebel on occasion.

And here we come to the outstanding difference between the two groups. "Rebel on occasion," I say. But why does the occasion arise so seldom among the mountain children, and why, when it does arise, are the manifestations of rebellion so mild in character? Why doesn't J. W. [a Cumberland boy] ever hit the teacher and call her Dope, and fling himself on the floor in a tantrum? Likewise, why are his conflicts with the other children, and indeed all of his aggressive expressions, colored with less emotional intensity than David's [a Greenwich Village boy]? And why, whether or not it has any connection with his aggressiveness, is his creative output also lacking in what we might call the "intensity" that characterizes Stephen's?

Here we see that we cannot meaningfully describe such differences as a matter of "degree." The factors responsible for them are imbedded in the particular kind of home and community conditions, standards, patterns, under which the children grow up.[4]

Summerville is a region which can no longer support its population. Sixty per cent of the inhabitants are on relief. Mortgages cover more than half the property. There is no electricity and no plumbing, and some houses have no outhouses. The homes are small—simple shacks surrounded by bare ground trampled by chickens, dogs, pigs, and children. The parents look older than their chronological age. The parents, as do the children, differ widely one from another. Some are neat, healthy, and cheerful while others are patently discouraged, stooped, and sad in speech and action. But all of them are kind to their children. They spend much of their time with their offspring—in fact, all of it—since the younger generation is not shooed out of the house. The whole family goes to bed and arises at the same time.

We could say that the placidity of the Summerville children seems to

[4] *Ibid.*, pp. 52–53.

derive from a culture (see also 18) markedly different from that of the Greenwich children. Youngsters have the same schedule as adults (they are even allowed to attend dances late at night). There is no special food or diet for babies—they eat what and when they want. There is no hurry about toilet training or weaning. The whole family takes turns rocking and playing with the baby. One father carried his one-year-old son on his shoulders for two miles while rounding up his cows just because he wanted the baby with him. Both the mother and the father spend much time at home, and the result seems to be less conflict in parental authority. There is a large yard to play in, and beyond that the whole mountainside. A child does not have to stay in bed when he is ill if he does not want to—or go to school if he would rather not. Children are taught that stealing is wrong. Sex is not explained to them; in fact, an attempt is made to hide from them the origin of babies. Respect for elders and for religion is consciously inculcated.

Contrasts in Personality. Miss Lewis does not conclude that children are better off in one community than in another. But her presentation does imply the question "Does well-developed intelligence, persistence and creativity demand the price of conflict, thwarting, and strong stimulation?" There is not sufficient evidence at the present time to indicate the answer. But the import for teachers is clear. Not only do children differ one from the other in any given community, but the problems that the teacher will face vary from one locality to another. Generalizations about children must be interpreted in the light of community influences. It is not enough for teachers to study about children from books. They must, if they are to have the understanding that will be most helpful, know something of the way life is lived in the community where they teach. This knowledge cannot be gathered from academic study alone. It must be the result of the teachers' continuing study of the community in which they live and teach.

CONTRASTS WITHIN COMMUNITIES

It is perhaps difficult for many persons to accept the fact that there are rather sharply defined classes of people in our democratic United States, as shown by a number of recent community case studies. The differences in social position are related to health, intellectual potential, and the educational aims and ambitions which the pupils bring to school. One view of the meaning and impact of social classes within a community has been presented by A. B. Hollingshead.[5]

[5] August B. Hollingshead, *Elmtown's Youth: The Impact of Social Classes on Adolescents*, New York: John Wiley & Sons, Inc., 1949. Excerpts from this book are used by permission.

The Class Structure of Elmtown. The highest social class, class I, is based on the combination of economic, legal (inheritance) and family factors. One must be born into this social class, which comprises 2 per cent of the population. There is a great deal of emphasis upon "good blood." Families are small—usually consisting of the parents and one or two children—and divorce is firmly condemned. Most of the families have an income of at least $5,000 yearly, but there are a few whose reported income ranges up to $25,000 or $30,000 annually. There are two or three cars in the family—expensive cars are common—and the older children have their own late-model coupés and convertibles. Extensive ownership entails heavy taxes, so there is a desire for low assessments and tax rates, which is fulfilled through control of political organizations. (A sorely needed high school building was kept from becoming a reality through the efforts of this class.) Leisure is dignified. Office girls do the work in the business establishments, and maids, housekeepers, and gardeners free class I adults for travel, shooting, fishing, and country club activities. Most of the middle-aged persons have attended college, though there is a smaller proportion of college graduates among those over 60. The majority of young persons attend college, but relatively few continue their education to the professional level. All class I families belong to a church, and those churches are largely supported by them. However, attendance is infrequent and irregular. Proper clothes—tailor-made, exclusive models—are a vital part of the code, as is the proper stationery and "maintaining one's position." "High personal morals are prevalent, especially among the older men and women, but middle-aged and younger men and women drink and gamble among themselves in a none too genteel manner. Some of them may not observe the laws of the community with care, yet there are no arrests." [6]

Half of the families in class II have achieved their positions by virtue of their own efforts and the remainder hold their place because of inheritance. They attempt to identify themselves with class I, but advancement is difficult if not impossible. Both the men and the women are excessively active in civic affairs, since their positions depend upon wealth and leadership. One-half of class II lives in the best residential area, and 90 per cent own their own homes. Law, medicine, dentistry, and engineering combine with privately owned businesses and salaried positions to provide the means by which incomes (in 1941) of from $3,000 to $10,000 were earned. Some help is available in the home to free the wife for her community obligations. One late-model car is a necessity—two-car families are rare. Marriages are stable, and there are typically two or three children in the family. Education is vital. The class

[6] *Ibid.*, p. 89.

as a whole is better educated than is class I. The occupational aim of boys is business or the professions. Girls are educated for a "desirable" marriage, though there is no attempt to "get rid of them." Most families belong to a church, and attendance and leadership are concomitants of their membership. Travel is limited, but the great majority belong to the country club.

Class III members are much aware of class lines. They see class I as superior but class II as much like themselves. They look down upon class IV but do not scorn its members. They believe class IV does not have "what it takes" but attribute their own inferior position to the efforts of class I and II to hold them down. Wages and salaries range from $2,000 to $4,000, with one-sixth of the wives working as teachers, bookkeepers, seamstresses, and secretaries. "These families most nearly fit the typical American stereotype represented in popular magazines."[7] They strive to live in the best residential districts, and 25 per cent have succeeded; most of them live in desirable districts; two-thirds are homeowners. Church attendance is on a higher average than in any other class. Marriage occurs somewhat earlier than in class II and the average number of children is 3.6. Marriage is stable and wives are faithful, but a few husbands "go astray." The class III member is less likely to be well educated than are members of class I and II. Only 1 per cent of the fathers have been graduated from college, while 10 per cent of the mothers hold a degree. They are "typical" joiners of clubs, lodges, and societies. A few belong to the country club. They look to the upper classes for political leadership and policy making. Their social doings are advertised in the newspapers.

> Their obvious search for publicity may be a symbol of the strain inherent in this class's pivotal position between the two conspicuous layers of the social structure . . . . Outwardly they are very "moral" and conservative, but some evidence indicated a wider departure from professed moral standards among the class III's than among the class II's . . . . The public record of criminal charges and convictions contains a few names of persons in class III, but none from classes I and II.[8]

Class IV members are cognizant of their inferior status. They resent the attitudes of the upper classes and avoid contact with the class below them. "The higher classes characterize class IV's as poor but honest, hard workers, who pay their taxes, raise their children properly, but never seem to get ahead financially."[9] They are regarded as workers who should keep their places. Family incomes run from $800 to $2,700, with the average about $1,500 annually. Mail-order and chain-store purchases are customary. There is little or no chance for savings, and one-fourth

[7] *Ibid.*, p. 97. [8] *Ibid.*, p. 102. [9] *Ibid.*, p. 103.

of them do not have a car and about one-third own, or are buying, a home. Dependence on relief is common during hard times and is not unknown at other times. Families are unstable, with one-third of the families broken by separation, divorce, and death. Marriage occurs earlier than in the higher classes, and the average number of children is 4.3. One-third of the mothers are employed in nonprestige work outside the home, but in addition they are all heavily burdened with household duties. The women are not joiners. Civic and community organizations are not ordinarily important factors in their lives. Many organizations (supposedly community-wide) are closed to them. One-third of the fathers and one-fifth of the mothers have not completed the eighth grade and only one of twenty fathers and one of eleven mothers have been graduated from high school. Religion is either enthusiastically shunned or accepted. Many regard the church as a protector of the upper classes. Leisure time is consumed by radio and movies with little reading of books and magazines or newspapers beyond the local ones. Baseball is popular, and travel is limited.

> There appears to be a definite attempt on the part of factory workers to "get away from the wife" for a few hours at least once or twice a week. While the men are away, the women may call on a neighbor, putter about the house, or just relax from the labor, noise, and excitement of the daily grind of preparing meals, putting up lunches, cleaning the house, washing and ironing clothes, going to market, and caring for the children. The man's escape from home may be an adjustment to a tired, irritable, and frustrated wife who has a task that is too difficult for her to do "with what she has to do it with." The higher classes know little about the leisure activities of the class IV's, and they care less . . . .
>
> Periodically, the attention of the community is focused very briefly on some person who has committed a crime. This occurs more frequently in class IV than in class III, for 14 per cent of class IV fathers were convicted in local courts of offense between 1934 and 1941, but only 4 per cent of class III fathers.[10]

Class V is regarded as the scum of society by the other groups—delinquent, immoral, slovenly, lazy, and cantankerous. The members of this class are passive. Their past efforts have been to no avail, and they see no prospects for betterment. They ". . . give the impression of being resigned to a life of frustration and defeat in a community that despises them for their disregard of morals, lack of 'success' goals, and dire poverty." [11] Over half of the mothers work as waitresses, dishwashers, cleaning women, and unskilled domestic workers to supplement incomes that run up to $1,500 but which average $800 to $900 annually (these fig-

[10] *Ibid.*, p. 110.
[11] *Ibid.*, p. 111.

ures as of 1941). Clothes, furniture, and food are not begged for, but members of this class know how to make their needs known in an effective manner. Rummage sales are an important source of clothes. Bank credit is unknown, and the loan companies are very careful about making loans to class V members. Many are employed irregularly and are undependable workers because they will leave a job readily and without notice. They are excluded from the better residential districts and live in a swampy area. Their homes are run-down box-like affairs with coal and wood stoves, worn-out furniture and wardrobes consisting of nails in the wall. Water is carried into almost one-fourth of the homes within the city limits. Privacy is almost unknown—parents, children, and relatives live together in two or three rooms. Divorce and separation are frequent—over half the homes are broken by divorce, desertion, separation or death. ". . . The class culture has established a family pattern where serial monogamy is the rule." [12] Of the births in this class, 20 to 25 per cent are illegitimate. There is an average of 5.6 children per mother. Education is largely limited to the elementary school—5 of 230 adults have been graduated from high school. Religious ties are weak. There is practically no membership in organizations. Leisure activities consist of gambling, gossip, attendance at cheap theaters, and drinking—none of which are pursued as family units. These people are well known to the police, sheriff, and judge. In this class, 8 per cent of the women have been apprehended for various reasons—mostly drunkenness and sex offenses. Almost half of the men were convicted of drunkenness, sex crimes, or offenses against property in the period between 1934 and 1941.

The Young People of Elmtown. The study of the class structure of Elmtown was designed ". . . to test the hypothesis that the social behavior of adolescents is related functionally to the position their families occupy in the social structure of the community." [13] Hollingshead employed statistical procedures to test his data and found that although the relationship was not perfect it was highly significant. Teachers seeking to understand pupils are inevitably faced with problems that arise from the kind of community and the class in that community in which the pupils are reared.

1. School life. The college-preparatory, general, and commercial courses of the high school have definite prestige values in the eyes of pupils. Of the class I and II pupils, 64 per cent choose the college-preparatory courses and shun the commercial curriculum. One-half of the class III pupils take the general course, and the remainder are about equally distributed in the other two courses. Class IV's enroll in the general and

[12] *Ibid.*, p. 116.
[13] *Ibid.*, p. 439.

commercial courses, while only 9 per cent enroll in the college-preparatory curriculum. Class V's are much like the IV's except that only 4 per cent elect the college-preparatory course. Higher grades are received by the class I and II pupils, and few of them receive the lowest grades. The percentage of failures in class I and II is 2.9, while that of class V is 23.1 per cent. "Although intelligence was associated significantly with class position, the degree of association was not high enough to account for the concentration of failures in class V. Neither was it great enough to attribute the high grades in classes I and II to the intellectual capacity of this prestige level." [14] Part of the superiority of the upper classes is attributed to the stress placed by their class on competition and success.

On the other hand, class V's have been constantly subjected to worry, strain and failure. These children carry into the school the attitude of their parents that struggle against wealthy people is fruitless. Despite the better grades of children from the upper classes, an analysis of parent-teacher conferences shows the majority of such conferences with I, II, and III parents to be concerned with schoolwork, while parents of class IV and V are counseled about discipline. Boys from all classes participate in sports in equal proportions, but attendance at games by class V is poor —almost half of them do not attend any games. (This is not a cost factor because these children do attend movies where the admission price is about the same.) Dancing is the least popular school activity for all classes, and practically no class IV and V pupils attend the dances. One class V girl went to a dance with a class IV boy and reported, "The kids treated me so I didn't want to go any more." No class V pupils are elected to the student council. Participation in any student activity ranges from 100 per cent in class I to 27 per cent in class V. A class IV girl reported the situation in regard to student activities as follows: "Frankly, for a lot of us there is nothing here, but just going to classes, listening to the teacher, reciting, studying, and going home again. We are pushed out of things. There is a group of girls here who think they are higher than us. They look down on us." [15]

2. Cliques and dates. The formation of cliques of two to twelve pupils definitely follows class lines. The belief that pupil groups are formed on the basis of age, intelligence, and interest is not supported by the Elmtown data. Should two girls from different classes become friendly it is not uncommon for the other clique members to show their disapproval,

[14] *Ibid.*, p. 175. These data are confirmed by a study of New Haven, Connecticut, James S. Davie, "Social Class Factors and School Attendance," *Harvard Educational Review*, 23:175–185, 1953.

[15] *Ibid.*, p. 202.

and unless the friend is dropped the girl will be dropped from her own clique. Over half the cliques are within a given prestige class for both boys and girls. About one-third of the cliques cross one class line, and 4 per cent cross two class lines. Three-fourths of "best friends" are within the same class. One's reputation is largely a matter of the clique with which one associates.

Dates also follow class lines. The majority of dates are within one class but may spread to four classes. For example, class IV dates include those from all other classes, but class IV dates with class I are only 3 or 4 per cent, and with class V, 6 or 7 per cent. Clearly all other classes tend to avoid class V. Out-of-school dates are more frequent among class IV and V boys and girls, and the boys find dating difficult because of the lack of money.

The sex taboo operates for all classes, but it is violated more frequently by girls and boys from classes IV and V. Hollingshead cautions against generalizations regarding sex behavior because of the community mores requiring reticence in asking questions regarding this aspect of behavior, but says, "No case was found in which the boy [admitting sex relations] belonged to a lower class than the girl. Clearly in this small sample there was a strong tendency for young Elmtown males to exploit lower class females sexually . . . . Irrespective of the number of cases, the available figures throw a narrow beam of light on the question of whom young males in our society seek out for sex thrills."[16] The problem of cliques and dating leads Hollingshead to conclude that the behavior of adolescents clearly reflects the adult class structure.

3. Attitudes toward religion. Young people in Elmtown adopt the religion and acquire the attitudes of their parents in much the same manner as other behavior and attitudes. Devout parents raise devout children. The lower the class level the greater the percentage of nonaffiliation with any church. The higher the social class the higher the number of youth organizations within the church specifically designed to meet the needs of youth. However, these needs are social rather than religious. Membership in church-affiliated youth groups follows the same pattern of exclusion and inclusion that characterizes the formation of cliques and dominates dating patterns. Some of the ministers and some of the churches frown upon motion pictures, dancing, and card playing, but this disapproval has little effect upon the young people. They go the way dictated by the standards of their class. If they are detected, in spite of their "conspiracy of silence," they are likely to withdraw from active participation in the church groups. One element in the religious structure is of particular interest to teachers because of the possibility

[16] *Ibid.*, p. 240.

that teachers may adopt a similar viewpoint: Some ministers find working with class IV's and V's a nonrewarding activity.

> . . . They know that members of the congregation resent the presence of these people; so they do not encourage their attendance.
>
> Three ministers related stories about unpleasant experiences they had with certain of these families [class V] before they learned that it is wise to "follow the line of least resistance" and let them alone. Four frankly stated that these people are beyond help, as far as the ministers are concerned, and they do not try to reach them in any way. Seven reported that they officiate at funerals, weddings, and baptisms if they are asked; two refuse to perform these rites on religious grounds.[17]

4. Work experiences. A part-time job is part of the culture for youths of class III and below. Many youths in class IV and V have to work to help support the family. The kind of job available roughly corresponds to the job pattern of the adult in the class. Class I and II youths, if they work, do so as clerks in the better stores and as office workers for professional people.

> Jobs open to students have assigned values similar to those which prevail in the adult work world. Office work in the stores, in the mill, and for doctors and lawyers rated highest; clerical work in locally owned department, hardware, jewelry, and grocery stores is next. Then comes work in the chain stores and stores owned by Jews. Work in service stations, garages, and in the theaters is respectable, but it does not carry as much prestige. Housework, paper routes, and the care of children in the afternoons and evenings are looked upon as necessary but hardly dignified. Waiting on table in local cafés and carrying and washing dishes are definitely menial and viewed with disfavor by the adolescents and many of their parents. Janitors, junk yard, garbage, and ash haulers are at the bottom of the job hierarchy.[18]

Usually the parents make the contacts for the jobs in class II. Should a class II parent allow his son or daughter to work "below his class level" he is frowned upon by others of his class and is condemned by the class V's for "hogging" jobs. Being a waitress is rated the lowest type of work, and a class IV girl who took such a job was dropped by her clique. A boy from class II who worked as a fry cook was soon dropped from his clique, forced to clique with III's and IV's, learned to drink, and became a "common bum." Class II youth get desirable jobs, as do some class III's if their parents have the right connections. The rest take what they can get.

Vocational interests follow much the same pattern as indicated above. Three-fourths of the class II's and one-third of the class III's aim at the

[17] *Ibid.*, p. 117.
[18] *Ibid.*, p. 173.

professions. Clerical objectives attract the class III's and IV's. Class V's are predominantly undecided and may consider "highly dramatic, romantic, and freak jobs, such as wild animal trainer, bareback rider in a circus, six-day bicycle racer, [or] juggler in a carnival. . . ." [18]

The myth that every boy may become a millionaire or President or can climb the economic and social ladder to occupational prestige is not accepted by Elmtown's youth. This is reflected rather clearly in the fact that occupational aim pretty well accords with the promise that class structure holds for youth in the various social classes. Warner, Havighurst, and Loeb also point to the fallacy of believing that all children have an equal chance to get to the top (279).

5. Recreation and pleasure. An analysis of recreational pursuits is made difficult because of the "conspiracy of silence"; that is, some kinds of pleasure are indulged in but not freely talked about. These tabooed pleasures include drinking, gambling, and sex play. They are not openly discussed, but both adults and youths recognize them as a part of the culture.

Boy Scout organizations are predominantly for class III and above. Of 116 class V boys one was a scout, while 13 of 21 class II boys were members. No class V girls belong to the Camp Fire Girls. Girl Scouts are somewhat less exclusive, and this fact limits the interest that classes I and II have in the organization. Less than one-third of all Elmtown youth are attracted by these organizations.

Most of the recreation is informal. Informal visiting is popular and follows clique groups. There is little visiting in class V, each youth tending to go his or her own way alone. Motion pictures attract over 90 per cent of Elmtown youth, and the higher the class the more frequent the attendance. The feature picture is less of a drawing card than is the theater where one's friends go—class IV's and V's attend the cheaper theaters, and the upper class IV's and the rest attend the theater where first-run pictures are shown.

Dancing parties are frequently held for class II's, fewer for III's and IV's, and none for V's. Here, too, cliques determine the issuance of invitations. Public dance halls provide for this form of recreation for class V, and class II girls do not attend them. Others who attend are likely to be stigmatized for their interest. "The net effect is the segregation of the young people along class lines at the private, semi-public, and public dances." [19]

Reading is not a popular pastime, and nonreaders tend to look down on those who have reading interests. The magazines commonly read are

[18] *Ibid.*, p. 284.
[19] *Ibid.*, pp. 306f.

the "slicks." The reading of books in class II is largely to supplement schoolwork, while it appears that reading is an escape for class V girls. Bowling is a popular sport for the upper classes but attracts no class V's. Roller skating is the common pastime, being engaged in by 9 per cent of I's and II's and by 50 per cent of the class V's. The girl frequenters of the skating rink have shady reputations—all of one clique of five girls was said by one of them to have had sex relations with the "right fella."

Hunting and fishing are enjoyed by all boys. But class V's cannot get permission to hunt on posted farms. Trapping is popular with class V's, but the combination of class and strong smell make it doubly difficult for boy trappers to be accepted at school. The poolhall is a respectable place but is shunned by women, and class V boys are excluded. Pool playing is with one's clique mates, so it does not increase social interaction.

> Drinking is approved by the majority of boys as long as it is done away from the school, the church, and generally away from parents, but there are exceptions. A rule strictly followed within the peer group when alcohol has been taken is: Do not talk around teachers, preachers, or parents; if they start questioning you about who is drinking, do not admit anything. Nevertheless, some students talk from time to time about certain students' drinking, often only after the person gossiped about has drunk to excess. But if adults try to track these stories down they invariably encounter denial after denial; no one knows anything.[21]

The drinking pattern seems to differ from class to class only in terms of place and what is drunk—not in amount or frequency. Drinking is associated with age, so that by the end of the senior year two-fifths of the boys and one-fifth of the girls have experimented with it. Girls who drink excessively are avoided by others of their clique.

6. The school's holding power. Much of the influence of class structure is summarized and epitomized in the school's holding power. The result is just about what might be expected from the foregoing descriptions. Elmtowners believe that school leavers are predominantly farm children. However, only one-fourth of school-age youth are children of farmers, while three-fourths of the school leavers live in town. Of class I and II youth 100 per cent are in school, and 92 per cent of class III attend, while 58 per cent of high school-age persons in class IV attend and only 11 per cent of high school age in class V attend.

The tendency to leave school begins to manifest itself in elementary school and gains increasing momentum by age sixteen. Girls stay in school somewhat longer than do boys. One-half of class V students have dropped

[21] *Ibid.*, p. 320.

out by the end of the eighth grade and almost one-half of class IV's have dropped out by the end of the ninth grade. Seasonal employment seems to have little influence, but most dropouts occur prior to the beginning of the next grade. For those who drop out during the school term the first six weeks is the critical period—three times as many leave during that period as in any other six-week period. Dropouts have significantly lower scholarship and attendance records than do those from all classes who stay in school. They have also more frequently been in conflict with school authorities. Lower intelligence seems to be a factor in class IV dropouts, but there is no significant intellectual difference between the class V's who stay and those who leave.

School withdrawals follow the family pattern—the number of years children attend schools tends to resemble the number of years their parents attended. ". . . We are convinced that this pattern has been handed down in many cases from the grandparents to the parents, and on to the adolescent's generation. We shall go one step further and say the adolescents may be expected to transmit it to their children through the subtle process of social learning in the family and the community, *not* through the germ plasm." [32]

Withdrawals are associated with economic pressures, peer relationships (clique relations may be said to be a factor both in the school's holding power and in school withdrawals), and the treatment of teachers. Economic pressures, the strain of buying books and clothes and having money for dates, as well as the necessity to help out at home, are difficult problems for class IV and V youngsters. Children's teasing is often referred to by the school leaver. They feel the pain of being isolated from student groups and activities. The sentiment was often expressed by teachers that withdrawal was good riddance. The experienced teachers expected to have trouble with many of the class IV and V children. The teachers' feelings were not entirely without basis. Class IV and V children and parents openly expressed their resentment of what they considered unjustifiable interference. They believed that punishment was more severe for transgressors from the lower classes, whereas "If the delinquent comes from a family with some influence, discipline is tempered in accordance with the effects the family influence may have on the teacher, the principal, and the superintendent." [33] A class IV girl reported that although her sister earned the grades that should have made her salutatorian, the honor was given to a doctor's daughter.

Lest the reader feel that the discriminations in Elmtown simply represent the view of one investigator and writer, it should be said that many

[32] *Ibid.*, p. 337.
[33] *Ibid.*, pp. 333f.

recent publications have been giving attention to this matter. One such publication, of particular interest because it represents the work of a large committee and many authors, is that of the Association for Supervision and Curriculum Development of the National Education Association. In this publication it is brought to the attention of the reader that children from some classes find the culture of the school at considerable variance with their out-of-school culture.[24] "As they find their own backgrounds disapproved and themselves cut off from participation, children from ethnic and economic sub-groups have two strikes against them in learning new ways to get along in the school and in the larger society." This problem cannot be overlooked on the grounds that it concerns only a few children. It is estimated that about two-thirds of all American children come from native American stock below the middle class or from racial and ethnic minority groups: Negro, Indian, Mexican, and Oriental.

THE TEACHER IN THE SOCIAL SETTING

The Class Status of Teachers. If we are to realize educational objectives, particularly the objective of maximum self-realization, it is necessary that teachers understand the implications of their own class status. If there is truly to be understanding and sympathetic treatment of *all* children, teachers must realize that there are psychological factors barring the way to facile objectivity.

The great majority of teachers belong to the middle class (60). Some of them start in the middle class and stay there; some start in the middle class and move upward; and some start in the lower class and move upward successfully. It can be seen from the foregoing data that the last group fight a difficult battle to overcome the barriers of peer and teacher attitudes and the tendency to place them in terminal curricula. They find the collegiate study necessary for teacher training largely unavailable. When they are qualified as teachers it is only natural that they reflect middle-class ideology and attitudes. Consciously or unconsciously they seek to maintain or consolidate their status. Continued professional study, particularly of psychology, cultural anthropology, and sociology, will aid in a broader orientation. There must be an attempt in teacher-education programs to help them develop a less biased emotional orientation.

The Viewpoint of the Teacher. Even after a teacher has come to realize that class structure places limitations upon the equal opportunity of all pupils to develop their potential, his problems have not ended.

[24] Elizabeth Hall Brady, in *Fostering Mental Health in Our Schools*, 1950 Yearbook, Association for Supervision and Curriculum Development, National Education Association, Washington, 1950, p. 30.

Then it becomes necessary to adopt what might be called "bold behavior." Attempts to improve the viewpoints of children from the lower classes, to accept them in spite of their behavior and attitudes, to view them objectively despite tattered clothing, body odors, and dirty faces and hands is an unrewarding task. There is the likelihood that middle- and upper-class people will look askance upon his efforts. There may be a tendency to frown on the association the teacher will have to make in such endeavors. Thus, the teacher will find his own security threatened (remember Elmtown's ministers). In addition, the protective shell of the lower classes is likely to cause parents to resent the well-meaning advances of the teacher. The teacher may be greeted with the words "What trouble has Johnny been getting into now?" This is an attitude developed from past experience, when the teacher only came around when there was a complaint to make. Finally, there is the well-known pressure which is exerted to make the teacher conform to the mores of the community. These mores include looking down upon and discriminating against those who, it is felt, have "bad blood." Community pressure is the more urgent because of recent emphases that the teachers become a part of community life. Here again identification with the more unfortunate in the community is likely to increase the teacher's difficulties in adjustment.

Fortunately, the profession of teaching is largely filled with persons whose ideals include the concept of social equality. It seems probable that, once having recognized the existence of the problem, teachers are likely to adopt the policy of bold behavior.

Implications for the Teacher. There is no pat solution to the many educational problems posed by the existence of social classes and the prevalence of class ideologies (61, p. 267). It is likely that each teacher will have to work out his own approaches in light of the local situation. The author feels that it will be somewhat easier to avoid discrimination when one is forewarned of the problem. It may be that among the following suggestions will be found a successful approach.

1. It may be necessary to adopt broader educational goals. The academic approach has limited appeal. For those who are contemplating college, the academic approach may be sufficiently stimulating. For those who cannot reasonably hope to attend college, craftwork, handiwork, and emphasis upon daily problems of living (*e.g.*, marriage and the family) and social understanding may be more realistic. Nor would those who continue their educations suffer from such an emphasis.

2. Learning processes should embrace various approaches rather than depending solely upon reading and listening. Audio-visual aids, excursions, utilization of resource persons, displays, and laboratory experiences

tend to broaden understanding of one's culture and foster recognition of individual merit.

3. Teachers should participate more widely in the life of the community. This will make them more conscious of the community differences and will also make it possible to use the life of the various social classes as the basis for group discussions and examples.

> Teachers should participate more in the life of the community in which they teach. This statement does not mean merely that teachers should teach a Sunday-school class and sing in the church choir. It means that teachers should *live* the life of the community as well as give their services. Teachers should not be isolated. We cannot afford to have teachers who are barred from living like other people. It is not good for children to be taught by such people. Why should teachers have to be more "proper" than parents? Parents are not models of morality at all times. Even middle-class parents do many things which are bad examples for their children—things of which they would disapprove in a teacher. In some societies, such as that of early China, a teacher taught a boy to become a man of the world. The teacher had more freedom and was supposed to be more sophisticated than the parents of the community.[25]

4. Because frustration often leads to aggression, the youngsters in the lower classes need opportunities to get rid of their tensions (76). They particularly need the satisfaction that comes from successful group participation and the assurance of being wanted and considered valuable despite their limited backgrounds. Techniques for releasing tension, such as psychodrama, sociodrama, expression through art, spontaneous play, athletics, and music, should be more widely utilized.

5. Less attention should be given to group tests of intelligence which weigh the verbal factor too heavily. Some persons have recommended that points be added to the scores of youngsters from the lower socioeconomic levels in recognition of their relatively poor environments. Others have recommended that tests be discarded until they can be made to account for differing opportunity. Perhaps it would be wiser to use tests with due regard to their limitations and as supplements to other sources of information about pupils (82).

All these points may be summarized by saying that a wide variety of incentives should be used so that the school has wider appeal. In short, the whole problem means putting into action the theory that individual differences should be recognized in effective educational programs. Education should enable every individual to make his unique contribution to truly democratic living.

[25] W. Lloyd Warner, Robert J. Havighurst, and Martin B. Loeb, *Who Shall Be Educated?* New York: Harper & Brothers, 1944. p. 171.

SUMMARY

Psychological Principle	*Practical Application*
Pupils' behavior is influenced both by heredity and environment.	Knowledge of children must be partially based on the study of culture.
Rapid mental development and creativity may be purchased at the price of inner stability and serenity.	Encouragement of mental growth should accompany the promotion of emotional stability.
Children in the upper classes have a security which stems from an assurance absorbed from parents.	Teachers may encounter difficulty in stimulating some pupils because they are satisfied with the *status quo*.
Children of the lower classes have an insecurity which stems from their rejection by other classes.	Teachers must regard manifestations of insecurity as stemming from factors beyond individual control.
Youngsters tend to associate with others of their social class.	Teachers may use spontaneous groupings as a point of departure for extending social interaction.
The school's holding power is largely in terms of the social class to which a child belongs.	Schoolwork must shift to an emphasis upon what school means to each individual.
For the most part, teachers are middle-class in their social ideology.	The tendency to think of middle-class values as the only right ones must be avoided.
Attempts to help the lower classes is often an unrewarding activity.	Teachers will find it necessary to adhere to the ethics of their profession on an *ethical* rather than a material basis.
Community pressures are at the base of many individual differences.	Teachers must live the life of the entire community in order to understand all its aspects.

PROBLEMS AND EXERCISES

1. How would you explain the fact that relatively little space is devoted to a discussion of social classes in education and psychology texts?
2. If the choice were presented, would you prefer to raise your children in the "Cumberland" or in "Greenwich Village"?
3. To what extent would you agree that rapid mental development is purchased at the price of emotional stability?
4. Have you had experiences in your own home town that give evidence of class lines and distinctions?
5. Do you think that there is closer relationship between class I people and class IV people than between class I and class III?
6. Evaluate the statement "There is a danger present for society as a whole in the fact that class I people are not reproducing themselves."
7. Since the sex taboo operates for all classes, how would you explain the fact that the taboo is more frequently violated by persons in the lower classes?
8. Do you think school-work programs (permitting students to work part time under school supervision and for school credit) would tend to make the holding power of the school stronger for lower-class pupils?

9. Would it be realistic to have a different set of educational aims for the various social classes?

10. Have you had any experiences that support the contention that teachers do not generally have the interests of lower-class pupils in mind?

11. Evaluate the relative merits of the points in the section "Implications for the Teacher" and offer additional points that you think should be included in the list.

SUGGESTED ADDITIONAL READINGS

Davis, W. Allison, and Robert J. Havighurst, *Father of the Man*, Boston: Houghton Mifflin Company, 1947.

The subtitle of this book is "How Your Child Gets His Personality." The answer to the problem is given in terms of the hereditary potential *and* the cultural environment. Typical pressures in the various social strata are described.

Hollingshead, August B., *Elmtown's Youth: The Impact of Social Classes on Adolescents*, New York: John Wiley & Sons, Inc., 1949.

In this book emphasis is placed on the role of the social class in determining adolescent behavior and attitude. It is suggested that two or three class members read the book and report what they feel are pertinent educational implications.

Lewis, Claudia, *Children of the Cumberland*, New York: Columbia University Press, 1946.

The major part of this book is concerned with life in the Cumberlands, with special reference to the effects of this life on the personality of the children. The author's sympathetic view of children and her lack of dogmatism make interesting and instructive reading.

Warner, W. Lloyd, Robert J. Havighurst, and Martin B. Loeb, *Who Shall Be Educated?* New York: Harper & Brothers, 1944.

This book approaches the study of social classes by tracing the experiences of a few pupils and teachers in their daily actions. The myth of equal educational opportunity and social mobility is exposed.

AUDIO-VISUAL MATERIAL

Experimental Studies of Social Climate of Groups, State University of Iowa, Iowa City, Iowa. (30 min, BW, sd.)

Shows behavior of groups of boys in organized clubs run on democratic, laissez-faire, and autocratic principles. Indicates how behavior varies as membership is transferred from one type of leadership to another.

Family Circles, McGraw-Hill Book Company, Inc., 330 West 42d Street, New York 18. (31 min, BW, sd.)

Experiences of three children illustrate vividly how parental indifference, lack of imagination, and emotional conflict at home can destroy a child's confidence and his enthusiasm for success at school.

19

LANGUAGE DEVELOPMENT

MAN IS SUPERIOR to other animals in several ways. Comparative studies show that man is superior because he has a better brain, the ability to oppose thumb and fingers, and the ability to use language to facilitate adaptation to his environment. As a practical matter of concern to the student of educational psychology, little can be done about the brain, or, aside from exercise, about finger-thumb opposition. But a very great deal can be done to facilitate growth in language and communication.

There is no need to minimize the importance of a complexly organized brain or to undervalue the importance of thumb-finger opposition. We can also believe that man's position of superiority is largely dependent upon the use and development of language. In the main, language consists of a body of words and a system of combining these words to communicate thoughts. Gestures and grimaces also are used in communication and are, strictly speaking, a part of language, but words and their combinations are the major feature.

It is through language that the thoughts and discoveries of previous generations are combined with those of the present generation. It is through language that the discoveries of the present are shared with others. It is through language that the divergent views of men are correlated and combined into working conclusions. It is through language that we as teachers do our work. Personality itself is dependent upon, and is revealed through, language. Mental hygiene has to do with the verbal description of one's feelings and others' understanding of them (143, pp. 91*f*.). In short, language is at the core of most, if not all, of the problems of educational psychology.

THE IMPORTANCE OF LANGUAGE

Vocabulary and Intelligence. A great deal of study and research has gone into the problem of measuring intelligence. Determining the weight of the brain has not been fruitful. Examining the convolutions of the cortex has not been revealing. Study by means of the electroencephalograph (a device for measuring brain waves) has not been particularly

promising as far as measurement is concerned. The most satisfactory device thus far is the intelligence test. An outstanding feature of most such tests is a section on vocabulary. Individual tests, such as the Stanford-Binet and the Wechsler-Bellevue, contains sections in which the vocabulary of the subject is sampled. Group tests, such as the California Test of Mental Maturity and the Kuhlmann-Anderson, have sections in which success depends upon comprehending word meaning. It has been found, through controlled observation, that one's adjustment to his total environment is positively correlated with the extent of his vocabulary. This is not in the least surprising when we stop to consider that one's comprehension of his environment, and his ability to manipulate it and function within it, is largely dependent upon words.

Studies indicate that vocabulary, more than any other one characteristic, influences a man's position. Major business executives rank high in measures of vocabulary (190). No doubt those individuals who have high general intelligence have the best equipment with which to acquire vocabulary. There is high positive correlation between the two measures, although the person who ranks highest on intelligence tests does not uniformly rank highest on vocabulary tests. Thus, he who aspires to a position of prominence might well plan a systematic procedure for vocabulary development.

The relationship between intelligence and vocabulary, as contrasted to the relationship between vocabulary and scholarship, is indicated in a study which shows that the best single indicator of potential scholarship is vocabulary. In this study the correlation between grade-point average and psychological rating was $.46 \pm .046$, while the correlation between vocabulary score and grade-point average was $.53 \pm .042$. That intelligence test scores and vocabulary are related, but not equivalent, measures is indicated by the correlation of $.64 \pm .034$ between these two measures (21). If these two scores were the same, then the coefficient would have been close to 1.00. It seems perfectly possible to increase the student's scholastic potential, if not his intelligence, by emphasizing vocabulary development. Even in mathematics, where one might not expect to find such a relationship, research studies have indicated that better-than-average vocabulary in pupils with a mental age of fourteen years was associated with better success in algebra. The differences in accomplishment (involving substitution, graphs, equations, exponents, etc.) of pupils equated on the basis of mental age was significantly greater for those with the better vocabularies (39).

Another possible indication of the relationship of language to intelligence may be seen in studies of deaf children. Typically, the hard of hearing and the deaf make somewhat lower scores than do children with normal hearing. Further, the greater the extent of hearing loss the lower

the intelligence score (104, p. 314). On the other hand, blind or visually handicapped children are less likely to have significantly lower intelligence test scores than are the deaf. Various interpretations may be made from these results. It is possible that deafness limits the optimum development of intelligence. It must be remembered that the differences indicated are group differences. It would be erroneous to believe that *because* a child is blind or deaf he must of necessity be lower in intelligence than a child who has no sensory handicap.

It has been noted that bright children as a rule learn to talk sooner and, age for age, have larger vocabularies than do children of average intelligence. In fact, one of the earliest indications of unusual intelligence in children is the early development of speech (260, p. 21). However, it should be observed that delayed speech development is not a sure indication of slow mental development.

Language and Adjustment. Language plays a major role in the individual's adjustment to his environment. Many of the difficulties in which one finds himself may be traced to the inability to make his wishes and demands clear to others. This type of difficulty is faced by adults as well as by children, as is indicated in the following: [1]

> . . . A practicing psychiatrist, Dr. Coyne Campbell, speaking in 1941 before the Central States Speech Association meeting in Oklahoma City, expressed it [the role of language in adjustment] so pointedly and so simply that it will serve our purpose well to recall his main statements. What Dr. Campbell said, in effect, was that the patients who were brought to him because they had been judged to be seriously maladjusted or even "insane" showed one chief symptom: *They were unable to tell him clearly what was the matter.* They simply could not put into words the difficulties with which they were beset. Surely no one who has made it his business to help people in trouble has failed to observe their relative inarticulateness.

It has frequently been said that a large part of problem solving consists of defining the problem. Words and combinations of words are necessary to describe a situation to oneself as well as to others. To a marked extent, thinking is a process of talking to oneself. Words enable a man to think about objects and situations when they are not immediately before him. Studies of memory show that verbalized facts and ideas condensed into principles are relatively easy to remember. Language thus helps to assemble materials in such a way that they can be used (296, p. 594).

Language and Communication. The most obvious importance of language, of course, resides in its use as a conventionalized system of social

[1] Wendell Johnson, *People in Quandaries*, New York: Harper & Brothers, 1946, p. 15.

communication. Through usage and custom words come to mean precise and specific things. At home, in school, at play, and at work, communication is an integral part of the situation. Many of the arguments in which we find ourselves involved are the result of "foggy" communication. Often the argument is resolved by discovering that "we were talking about the same thing all the time."

It is possible that the whole course of our present world may have been changed by the misunderstanding of one word. In 1945, when the Japanese answered the Potsdam terms for surrender they used the word *mokusatsu*, which was translated to mean "to ignore." The meaning intended by the emperor, the foreign minister, and the cabinet members was "to withhold comment while taking time to consider." This error is thought to have resulted in the use of the atomic bomb and the invasion of Manchuria by the Russians (61).

The importance of clear communication is to some extent illustrated by the fact that nations speaking the same language characteristically find themselves in accord, while those speaking different tongues view each other with suspicion. This is reflected in the preamble to the Constitution of the United Nations Educational, Scientific and Cultural Organization, which reads, in part:

> For these reasons the States parties to this Constitution, believing in full and equal opportunities for education for all in the unrestricted pursuit of objective truth and in the free exchange of ideas and knowledge, are agreed and determined to develop and to increase the means of communication between their peoples and to employ these means for the purposes of mutual understanding and a truer and more perfect knowledge of each other's lives.

Teachers would be more effective if they would conscientiously work to make communication clearer and more facile. In fact, the job of teaching would be simplified by realizing that some of the difficulty of getting across subject matter lies in clumsy communication. Teachers at all levels will do their pupils a great service by (1) stressing vocabulary development in general, (2) providing exercises leading to verbal facility, (3) encouraging the learning of the important, key words in specialized fields of knowledge, and (4) setting a good example.

Social organization is formed through communication, and its stability depends on facility in communication. To human beings, words are more than symbols—they are ideas and they are bonds of relationship. Language not only provides a vehicle for communication but aids in the acquisition and preservation of new ideas. Our world is organized by a tacit agreement which is codified by language (286, p. 250).

Earl J. McGrath, former U.S. Commissioner of Education, discerned

a new responsibility of the elementary school in teaching foreign language (177). It is generally recognized that, whether we wish it or not, United States citizens are in a position of responsibility. American citizens are needed who speak other languages with facility. McGrath does not seek to defend foreign-language study on the basis of mental discipline or increased facility in the use of English. He believes such study is required for the sake of communication and understanding. Along with many other scholars, he stresses the point that one cannot really appreciate the culture and consciousness of other nationalities without at least a slight knowledge of their language.

McGrath recommends that foreign language should be studied by *some* pupils in the elementary school. This accords with the recommendations of those who have studied the problems of the gifted and feel that language is one way to help take care of their needs. He also recommends that language be studied in the early grades. This accords with the fact that growth takes place most rapidly in the early years and that those who learn another language when they are young speak with less difficulty and accent than those who learn at a more advanced age. He recommends that language be studied in a functional manner, through conversation and in connection with study of the culture of the particular nation. This accords with the psychological principle that an economical way of learning is through activity and meaning. He recommends that language study be justified, not in terms of economic or political advantage, but from the standpoint of developing desirable attitudes toward people. This accords with the emphasis that education means the development of the whole person. Support for the validity of McGrath's view is found in a study dealing with the relationship of bilingualism to prejudice. It was found that strong racial prejudice accompanied slight knowledge of another culture and language. Spanish subjects with no knowledge or with a great deal of knowledge of Anglo culture had little bias—both high and low bilingual scores were associated with low racial-attitude scores (142).

The study of foreign language is not recommended for all elementary pupils. For many pupils, such study might be confusing and interfere with wholesome personality development. The relative ease with which some children learn an additional language is not sufficient justification for introducing it into the curriculum. For most pupils, efficiency in the mother tongue should remain the matter of primary concern (30).

HOW LANGUAGE DEVELOPS

Language Development in Infants. Language begins with the so-called birth cry before there is any conscious thought of communication. Development continues with the cooings and babblings of infants in their

first half year of life. Here is an excellent illustration of the statement that action begins with the organism. The infant may make single-letter sounds, like *mm*, *d*, *oo* or *ah*, which quickly become two-letter sounds, like *ba*, *wa*, or *do*. These babblings are repeated throughout approximately the first year.

The next (overlapping) step in development is that of acquiring passive language—understanding words but not yet being able to use them. This occurs during the latter part of the first year and the early part of the second year. The baby shows by action that he knows what "water," "dog," "milk," or "bath" is but is unable to say the word. This understanding is the result of conditioning—hearing the word repeatedly in conjunction with the presence of the object.

Passive language is quickly followed by the development of active vocabulary. Out of the infant babblings come such sounds as *da*, *ma*, *wa*, and *poo*, which are interpreted by fond adults as "daddy," "mamma," "water," and "spoon." The praise received, the satisfaction achieved, and the results gained strengthen the association for the child, and he too makes the functional connection. He then uses the word to help him get what he wants. If the words he invents are understood, he may not quickly put aside the incorrect pattern of speech. Twins sometimes develop speech less rapidly than do other children because they develop a language that is mutually understood and hence useful (68).

As the child gains ability to make sounds at will, imitation begins to function in language development. He responds to instruction and will, if pressure is avoided and patience is exercised by the instructor, try repeatedly to produce the sounds the instructor makes. The fact that imitation plays a large part in language development is illustrated by the existence of dialects, brogues, and accents.

The basic psychological factors operate in the continued development of language: (1) Further growth will stem from the individual's motivation, experiments, and experience, and (2) conditioning and association point to the need for repetition and meaningful contacts with people, objects, and ideas. Teachers will do well to remember that the development of passive language precedes the development of active language—that understanding usually precedes use. Since imitation plays an important role in language development, the child must be provided with examples and models of the best in verbal communication.

Improving Oral Communication. Language skills will vary greatly among children who are first entering school. Unless these differences are taken into account there will be a tendency to shame the ones with lesser ability. Implied comparisons, such as, "Listen to how well Mary expresses herself," indicate that the speaker is failing to take individual

differences into account. The result will be discouragement on the part of some pupils and unwarranted self-satisfaction among others.

Another psychological factor to be considered is that of personality. What appears to be a difference in intellectual development may actually be the difference between shyness and aggressiveness. The shy pupil should be encouraged and praised for what he does say. He should be shown that he is accepted by the group and helped to build self-confidence through the acquisition of skills. The child with aggressive tendencies should probably not be discouraged unless he becomes socially offensive. His tendency to interrupt and monopolize class time may be redirected. Studies of children who stutter and stammer show that physiological or mental disability are much less often causes of the defect than are emotional problems (174). In fact, classroom teachers can give substantial aid to stutterers simply by giving attention to emotional factors that would be desirable if there were no defect. Specifically, shaming should be avoided, sarcasm must be eliminated, pressure should be shunned, and attention should be directed to desirable speech patterns rather than to the imperfection.

Experience is necessary. The outmoded concept of child rearing that "children should be seen and not heard" must be completely cast aside. Children need a great deal of opportunity to talk, as well as something to talk about. Opportunities to recite are steps in the right direction. Permitting children to tell other class members what happened over the week end will give desirable exercise. Such events as field trips, class projects, and motion pictures give common experiences which can provide topics for discussion. The development in recent years of small committees and working groups is particularly encouraging from the standpoint of exercise in oral communication.[2]

Oral communication should also be emphasized in the upper grades and high school. Although criticism should be kept to a minimum, attention should be directed to word usage, acceptable grammatical form, and syntax. Leaving oral communication to the speech and English teachers is not enough. The importance of effective communication is such that every teacher needs to lend his support to language development.

Development of Reading Skills. Reading consists of the dual process of getting meaning from, and bringing meaning to, the printed page. The conventionalized symbols have definite connotations that must be learned. In addition, words inevitably call to the mind of every reader somewhat different meanings, depending upon his experiences. Repeated experiments reveal that reading experience cannot most profitably be begun

[2] It is recommended that the technique of sociometry be used in order to form the most effective groups (see Chap. 16).

before the mental age of six and one-half years has been attained. This does not mean that teachers must passively wait for mental development to take place. Actually there are "prereading" experiences that will hasten the arrival of reading readiness. Story telling, conversations among children, question-and-answer sessions, and meaningful experiences all play a part in developing reading readiness.

Among the readiness factors which must be added to the basic one of mental age are normal sensory acuity (eyes and ears), physical health (muscle tonus and vigor), perceptual development (discrimination of words and figures), conceptual development (awareness of meanings), motivation, emotional stability, and social adjustment (246, p. 115). The absolute minimum responsibility of the teacher is to be aware of these factors. Other responsibilities should include preservation of physical comfort (proper seats and lighting) and stimulation of growth (provision of developmental experiences).

There are many types of readiness involved in reading. The modern first-grade teacher recognizes these by starting with experience charts. The teacher prints on a large piece of paper, for all to see, the things which the pupils have experienced together and which they now want to see as reading material. Next, pupils are provided with preprimers, primers, and first readers. One pupil may be ready to read a preprimer but not a first reader. This should make it clear that the problem does not cease at the first grade, though it is perhaps of greatest importance at that level. Studies of "readability" indicate the continuing nature of the problem. "Readability" concerns length of sentences, word length, and interest appeal (91). People typically get greater enjoyment from reading material which is about three grade levels below what they can read. (From the standpoint of interest, a book for college sophomores should have eleventh-grade readability.) However, the teacher has the responsibility of bringing the student to a higher level of understanding.

Psychologically sound methods of reading instruction can perhaps best be understood by a brief view of the recent history of reading. In the latter part of the nineteenth century instruction was "logical." The first step was to learn the alphabet—lower-case and capital letter forms. This was followed by learning two-letter and three-letter words and syllables. Monosyllabic words were followed by larger words, which were then combined into simple phrases. Ultimately sentences and stories were introduced. Stories were likely to be written and presented on the basis of simple vocabulary rather than on the basis of interest. The next step in development came when the "word method" was introduced. It was discovered that words as a whole could be recognized without mastery of the alphabet. To meet this defect, phonics became an important part of reading instruction. It has been shown that skill in phonics is helpful

in achieving higher skills in reading (270). Phonics should not be overstressed, however, because various estimates indicate that only 40 to 60 per cent of our English vocabulary is phonetic.[2]

Today the logical approach has to an extent been replaced by the psychological approach, by which learning is attacked in terms of the learner's needs and interests. Methods of instruction are based upon experimental evidence of the most effective approach in terms of children's achievement, and the experience of the pupil, his interests, the meaning of the reading selections are important elements.

There is at present a tendency to use reading as one aspect of the more comprehensive language-arts program. There is a constant emphasis upon the importance of meaningful reading, which includes understanding, evaluation, and interpretation. In school, as in life outside of school, the important feature of reading is the individual's reaction. Understanding of words is only a first step. The ability to select, interpret, and apply facts according to one's purpose in reading is a skill that needs to be continuously exercised at all levels of education and in one's vocation. This interpretation of the nature and role of reading necessitates a change in emphasis in reading instruction and an extension of responsibility for the teaching of reading.

An illustration of how this works is afforded by a glance at a first-grade reading lesson. The youngsters had taken a trip to the school heating plant and afterwards had told the teacher to write on the experience chart what they had observed. Words such as "furnace," "ventilator," and "radiator" occurred in the story. During recess, the author asked some of the children what the words were, and they were able to read them without difficulty. It seems that first-graders often have less difficulty in distinguishing between words like "Christmas" and "ventilator" than they do with "house" and "horse," or "saw" and "was," when the stories in which the latter occur are not intimately related to their experience. In a good reading situation there is likely to be a variety of books rather than one basic text, in order to meet the interests and abilities of various pupils. Throughout the program there is an attempt to capitalize on the motivational power of success.

Many teachers feel that interest in reading and in continued reading is more important than skill which is acquired at the expense of enjoying reading. Justification for this view is found in the fact that many adolescents and adults do little reading other than comics and picture magazines after their formal schooling has ended. Oral reading is con-

[2] There is a current opinion that phonics has a place in reading instruction, including remedial reading, when there is a specific and indicated need for it, but not necessarily as an integral part of the reading program for youngsters who can quickly learn new words.

sidered less important than silent reading, but it may be used to discover and remedy typical errors that might become chronic. The basis for this emphasis lies in the fact that the reading we do for the gaining of knowledge and ideas will, for the most part, be done silently.

Another point to be considered, particularly at the high school level where too often it is assumed that the pupils have received the necessary basic reading instruction, is that further development in reading skill does not always result from reading experience. "Practice makes perfect" is a fallacious notion. Actually, practice consolidates what is practiced. If pupils practice poor reading habits they will not make gains. In short, high school teachers should give specific instruction which will lead to improved skill. The following suggestions are pertinent for high school pupils (see also Chapter 2):

1. Systematically seek to improve vocabulary.
2. Read easy and interesting material with a view to increasing speed.
3. Avoid being a "passive" reader by anticipating meanings and thoughts.
4. Test—and exercise—comprehension by using active recall immediately after reading an article.
5. Capitalize on the benefit of "knowledge of progress" by keeping a record of improvement.
6. Practice regularly with specific objectives in mind—vocabulary building, increased speed, retention of ideas, elimination of vocalization, etc.

Since it is not possible to teach young people all they need to know before they leave school, it is important that they be given a chance to develop skill and interest in reading which will open the way to continued learning. Meaning, interest, and directed and continuous growth are matters that deserve attention. These factors are no less important in developing reading skills than in other areas of development.

DEVELOPING WRITING SKILL

The development of skill in writing entails two distinct but related aspects, *i.e.*, handwriting and composition. Neither of these is wholly a matter of innate abilities or differences. Proper teaching facilitates growth in both aspects.

Factors in Handwriting. The average youngster will take the first steps toward writing by scribbling and drawing at about the age of five. These large, sweeping movements, involving hand, arm, and eye coordination, are a desirable preliminary to letter formation. Writing, as such, typically begins in the first grade. Youngsters who are not yet ready to write will display excessive tension, frown, lick the lips nervously, or curl their feet around the chair legs. Children's eyes are still

developing rapidly in the first grade; therefore strain should be avoided. Another indication of lack of readiness is that the child chronically places his face very close to his work.

Another consideration is that of need. Writing exercises will be much more effective if the child can see a relation to his own wants. This want may simply be a matter of seeing others write and wanting to do so himself. It may be that he desires to write his name on his work, to label a picture, or to help the teacher make an experience chart. Wall newspapers have been made by primary teachers to give meaning and motivation to writing (59, pp. 105f.).

The practice of teaching manuscript writing instead of cursive writing to beginners is gaining in popularity. The idea behind this method is that there will be less confusion on the child's part if he does not have to become simultaneously acquainted with several different letter forms. Inasmuch as manuscript writing is similar to the letters with which the child is becoming acquainted in his reading, there is considerable transfer of learning from one situation to the other. Adherents of cursive writing feel that delay only adds one more subject to an already crowded curriculum. Experimental data are not conclusive. However, general psychological data indicate that, in terms of readiness, it is more advantageous to teach the manuscript form at first. Transition to cursive writing could be made later (around the fourth grade) when fewer new concepts are being introduced to the child and when he has achieved the additional growth that will permit easier mastery (284). Whatever the choice, there are general teaching factors that should be considered. Legibility is the matter of first concern. Speed should not be emphasized until in the middle or upper grades, when coordination has improved.

Imitation plays an important part in learning to write. This may be seen from an examination of the characteristic differences between American writing and that seen in Sweden or Germany. Yet, despite similarity, there are wide individual differences. Inasmuch as each individual will differ in bone structure of the hand and wrist, muscular strength, hand-eye coordination, motivation, and experience, the effective teacher of writing will not expect all pupils to attain set standards.

Writing, like other kinds of learning, involves certain psychological factors. Esther Swenson summarizes these psychological factors into suggestions for teaching writing. Teachers should not insist on neatness beyond the pupil's capability. Long practice periods should be avoided by young persons who have to work hard for coordination. Discussion of the fine points of writing should be delayed until the distinctions can be seen. Writing for the sake of writing should be avoided—there should be an emphasis upon communication. Attempting to push a child be-

yond his maturational level will teach him not writing but "inadequacy, frustration or rebellion" (256, p. 268).

Emphasis on the basic skill of handwriting warrants the attention of all elementary and secondary teachers. The excuse that the typewriter deemphasizes the need for handwriting skill is not valid. The writing of friendly notes, the issuing of invitations and even the signing of one's name, to say nothing of the need for writing legible class notes, all point to the need for skill in handwriting. Handwriting is, among other things, a matter of habit which involves practice, motivation and attention to details. Improvement is influenced by the degree of satisfaction attained. Teachers at all levels share the responsibility for providing direction and fostering motivation.

. *Development of Written Composition.* During recent years there has been a controversy, as yet unresolved, regarding the most effective way to teach skill in writing compositions. There are those who adhere to the traditional theory that learning rules, practice in analyzing complex sentences, and drilling are basic to the acquisition of skills in composition. There are others who recommend that compositional skill will most readily be developed through functional use. Experimental evidence does not conclusively support either method. The consensus is that both methods can be used to good advantage and that there must be a combination of teacher purposes and pupil purposes (75).

In the primary grades and continuing in the upper elementary grades and high school, the incentive to writing compositions comes from a feeling of need. This need may be the desire to write an invitation to parents to visit school, to express thanks to someone who has talked to or entertained the class, or to write a bulletin or newspaper. Drill is used on an individual basis to overcome specific weaknesses or lack of knowledge. Rules are formulated because of the need to generalize experiences. Drill is not so much a matter of repetition as it is an opportunity to express oneself in another situation.

The contrasts between the two points of view and the need for coordinating them can be seen from the fact that composition demands two things: (1) an idea and (2) the skill to express the idea. There are those pupils who have worthwhile ideas but cannot phrase them interestingly and precisely. Others know the mechanics of expression but have nothing to write about. Teachers must give aid in both matters. Improved usage will come from guided practice in expressing what the pupils wish to communicate.

The current emphasis is to provide the child with something to communicate and then permit him to write and talk about it with a minimum of criticism. Since action begins with the organism, our first problem as

teachers is to give the pupil something to communicate. Without an idea to express, the rules of syntax will be relatively meaningless. Those who are most prolific in the use of language are said to be those, in general, who have the most ideas to express. However, opportunity for free expression may very well stimulate ideas.

None of the foregoing statements imply that there is no place in the school for grammar, provided it is taught in meaningful and functional situations. Keeping in mind the primary function of composition, improved communication, the teacher should point out persistent errors in a kindly and encouraging manner. However, the incidental teaching of grammar does not mean that it should be accidental.

One author recommends providing for grammar in the "creative school" by listing the concepts that should be taught. (This system can be used in any subject at the beginning of the term.) Then when a natural occasion arises, the concept can be taught. Such occasions will occur when an error is made, when a question arises, or a situation calling for the use of the concept is met (235, pp. 103f.). Contemporary findings do not disprove the frequent statement that "good English is a matter of habit." But today the emphasis is upon providing interesting language activities rather than upon eliminating errors as an end in itself. Children like to conform. If they have the chance to hear and use acceptable forms of expression, those forms will become habitual (123, pp. 93f.).

The reading of materials that are clearly and incisively expressed will be helpful. Since written language will resemble spoken language the encouragement of good speech habits in class and good usage on the part of the teacher will play their parts.

Efficient teaching of language can more readily be achieved by consistently applying tested psychological principles. The following suggestions are recommended:

1. Provide for balanced activities between formal grammar and functional usage.
2. Recognize the importance of meaning in terms of the pupil's developmental level.
3. Employ drill which has meaning.
4. Capitalize upon pupil experience and clarify and keep before him achievable goals.
5. Remember the motivating power of a degree of successful performance.

All teachers share in the responsibility for capitalizing on these principles. Such teaching will make language an effective tool for continued growth and development.

SUMMARY

Psychological Principle	*Practical Application*
Ability to use language is one of man's points of superiority.	Full realization of this potentiality is every teacher's responsibility.
Extent of vocabulary is positively correlated with measured I.Q.	*Perhaps* intelligence can be increased, but vocabulary can certainly be enlarged.
Good vocabulary increases the ability to learn.	Teachers should especially stress the vocabulary of their specialty.
Suspicion and distrust are generated by "foggy" communication.	Language instruction is a step toward international understanding.
Language development depends on motivation, conditioning, and imitation.	Individual needs, meaningful repetition, and a good example are important teaching factors.
Rich and varied experience increases language readiness.	Tours, experiments, etc., should be part of the language-arts program.
Reading readiness is a developmental process.	Readiness for various kinds and levels of reading concerns all teachers.
Continued improvement in reading will most likely result from conscious intent to improve.	High school teachers have the responsibility of providing continued instruction in reading.
Handwriting is partially a physical skill.	Teachers must observe individual differences in development and structure.
Composition first requires something to write about.	Teachers must provide experiences and clarify needs as a first step.
Psychologically, the idea precedes form.	Grammatical construction should be incidental to the expression of ideas.
Imitation plays a role in effective composition.	Good oral examples and wide reading stimulate growth in composition.

PROBLEMS AND EXERCISES

1. Evaluate the statement "Good thinking is dependent upon vocabulary as well as upon innate intelligence."
2. Do you believe that intelligence can be improved by the acquisition of a larger vocabulary? Give reasons for your answer.
3. What are the implications for the student in the studies which show high correlation between vocabulary and scholarship rating?
4. Find and report in class a recent article dealing with the relationship of language to adjustment.
5. What effect do you think the adoption of a universal language would have upon world affairs?
6. Visit some high school for half a day and make a record of the opportunities given students to practice oral communication. Does this exercise interfere with acquisition of subject-matter content?
7. Have some class member visit a first grade and report on the use of "experience charts" as an approach to reading.

8. Evaluate the statement "It is more important to develop an interest in reading than it is to develop skill in reading."

9. Assume that you are a high school teacher. Outline a program for improved reading skill in a class studying your present major subject.

10. What factors do you consider most important in the development of handwriting skill? When does improvement in handwriting cease?

11. Formulate a school-wide program for improving skill in composition at both the elementary and the secondary level. Present the plan to class members for criticism and evaluation.

SUGGESTED ADDITIONAL READINGS

Hefferman, Helen (ed.), "Experiences Designed to Encourage Language Expression," *Guiding the Young Child*, Boston: D. C. Heath and Company, 1951, pp. 93–113.

This chapter describes, through case examples, what can be done to help children in language development. The importance of experience and consistent example is stressed. Some views on bilingualism are included.

Hurlock, Elizabeth B., *Child Development*, 2d ed., New York: McGraw-Hill Book Company, Inc., 1950, pp. 203–246.

Factors conducive to vocabulary development, oral expression, and the prevention of disorders are outlined. The material is particularly pertinent for those preparing to teach in the elementary school.

LaBrant, Lou, "The Relations of Language and Speech Acquisitions to Personality Development," in Paul A. Witty and Charles E. Skinner (eds.), *Mental Hygiene in Modern Education*, New York: Rinehart & Company, Inc., 1939, pp. 324–352.

This chapter shows how pupils are molded by communication. Some do's and don't's for teachers are strongly emphasized.

Witty, Paul, "Vocabulary Growth and Development," *Reading in Modern Education*, Boston: D. C. Heath and Company, 1949, pp. 84–109.

This chapter reveals the results of various studies on the size of vocabulary at different ages and describes experiments in vocabulary building in school and adult life.

AUDIO-VISUAL MATERIAL

Improve Your Handwriting, Coronet Films, Inc., 65 East South Water, Chicago 1. (10 min, BW, sd.)

For intermediate grades and up. Shows how to improve physical skills of writing. Presents fundamentals in an understandable manner.

Making Sense with Sentences, Coronet. (10 min, BW or color sd.)

The significance of complete sentences for improved understanding is emphasized. What a complete sentence is and how it contributes to "complete thoughts" are dealt with.

Tips for Teachers, Jam Handy Organization, 1775 Broadway, New York. (10 min, BW, sd.)

Explains the significance of the teacher's personality in effective teaching. The importance of thorough preparation and clear presentation is portrayed.

20

MENTAL HYGIENE AS AN ASPECT OF EDUCATIONAL PSYCHOLOGY

MENTAL HYGIENE is increasingly coming to be recognized as an important aspect of educational psychology. Many books have been written, and more are continually appearing, which show that sound psychology can make a major contribution to mental health. The principles of mental hygiene have been directly expressed or strongly implied in other chapters. Consideration of these principles is necessary because mental hygiene is not a discrete aspect of education or psychology but a point of view, an orientation toward effective education.

THE MEANING OF MENTAL HEALTH AND MENTAL HYGIENE

The Concept of Mental Hygiene. The mental hygiene movement, beginning in 1908, is attributed to the work of Clifford Beers, who was at one time committed to a mental institution. He was so disturbed by the inhuman treatment he received, and by the misdirected efforts in such institutions in general, that he determined to get better treatment for the mentally ill (17). Emphasis on the abnormal characterized early efforts in mental hygiene. Today it is viewed in much the same light as physical hygiene. That is, it is now a concern of all people—not just those who are afflicted with illness. Like physical hygiene, mental hygiene stresses better living conditions that will not only cure the ill but prevent the onset of illness.

> Mental hygiene . . . is the program that one adopts to achieve mental health. It involves the prevention of maladjustment for normal people, as well as the curing of persons who already have become psychologically disorganized. It is the practical art of living according to the principles of sound psychology and philosophy. Generally speaking, we can say that the purpose of mental hygiene is to assist people in the realization of a fuller, happier, more harmonious, and more effective life.[1]

[1] Harold W. Bernard, *Toward Better Personal Adjustment*, New York: McGraw-Hill Book Company, Inc., 1951, pp. 17–18.

For the classroom teacher, mental hygiene is the practical art of learning and teaching according to principles of sound psychology so that pupils can realize a greater amount of their potential for well-rounded, happy, and efficient living. It thus becomes increasingly clear that mental hygiene is a particular way of looking at educational problems. For the classroom teacher, the mental hygiene viewpoint involves his attitude toward his task and his pupils, his use of methods, his choice of objectives, his use of materials, and his individual influence on the personality development of pupils.

The Concept of Mental Health. Mental health is not a passive acceptance of life and its conditions. It is a process of living that points to still better living. Karl Menninger states that mental health is not *just* efficiency, or contentment, or complacent abiding by rules. It is an adjusting process that involves a maximum of effectiveness and happiness. It means an even temper, functional intelligence, and consideration of the social order (189). Reality is accepted. Problems are solved when possible and lived with when unsolved or unsolvable.

Mental health, like physical health, is a matter of degree. The dividing line between good and poor mental health is not clearly defined. On each side of the line are continuous gradations. The aim of mental hygiene is to strive toward better mental health regardless of the position on the scale which one occupies at the present time. Hence, we can say that mental health is a goal toward which to strive rather than a static condition that can be achieved. Thus mental health should be defined as the *adjusting* of individuals.

The Aims of Mental Hygiene. As indicated above, mental hygiene has as its purpose helping individuals live a full, happy, harmonious, and effective life. It has also been indicated that the aims of mental hygiene are closely parallel to the aims of education. Let us examine the aims of education, as formulated by the Educational Policies Commission (see page 394) in the mental hygiene orientation.

1. The objectives of self-realization. These objectives include speaking, reading, and writing effectively; listening and observing; understanding and protecting physical and mental health; engaging in wholesome leisure-time activities both as participant and as spectator; and giving responsible direction to one's life. Such objectives give explicit meaning for a "fuller" life, in which many facets of the individual's personality are given expression.

2. The objectives of human relationship. The Educational Policies Commission asserts that the educated person puts human relations first. He enjoys a varied social life, he works cooperatively with others, including his family, and he strives to maintain democratic group relationships. In brief, he strives for more harmonious living, not only with others

but also with himself in scaling his ambitions to his abilities, making decisions and sticking to them, and developing a degree of tension tolerance that will allow him to put up with inevitable frustrations.

3. The objectives of economic efficiency. These objectives include two major goals: being an educated producer and being an educated consumer. Effective producers appreciate the value of quality workmanship. They appreciate the social value of work. They select wisely their occupation—in which they will strive for continuously improving efficiency. Effective producers plan their economic life, scale expenditures to their resources, and are skilled and informed buyers. Secondary teachers have a specific responsibility in the area of educating consumers, but all teachers can play a part in educating pupils to take a pride in workmanship.

4. The objectives of civic responsibility. Civic responsibility involves an interest in the welfare of all people and a sensitiveness to the disparities of human circumstances. It involves knowledge of propaganda, respect for the law, understanding and acceptance of civic duties, and unswerving loyalty to democratic ideals. Philosophers and mental hygienists have for a long time stressed the point that happiness cannot be obtained by its direct pursuit. Happiness is most likely to result when the individual outgrows restrictive egocentricity. Teachers who stress the moral and democratic ideal of "What can I give?" rather than "What can I get?" are at one time giving force to the aims of mental hygiene and those of education.

These overlapping aims may be related to the field of educational psychology. Again, we learn what we do. These aims must be sought in school if they are to function in after-school living. Teachers must seek to encourage self-realization in their pupils by providing many avenues of development to meet individual needs. They must seek to improve human relationships by providing opportunities for democratic procedures in academic work and in student activities. They must seek to develop economic efficiency by stimulating habits of workmanship and economies in the use of school buildings and materials. They must encourage civic responsibility by stressing good citizenship in the school.

The Need for Mental Hygiene Emphasis. Mental illness has justifiably been called the nation's number one health problem. It is estimated that one out of sixteen persons is suffering from mental illness and that one out of twelve children will at some time in his life be hospitalized for mental illness (230). Almost one-half (47 per cent) of the patients in all hospitals are there because of mental illness (202). The need for mental hygiene work is further emphasized by widespread social illnesses: delinquency, crime, suicide, alcoholism, and drug addiction.

In 1949, in view of the enormity of the problem, Robert Felix, Chief, Mental Hygiene Division, Public Health Service, stated that it is not possible for the schools to wait for an ideal time to work on the problem. We must act now to launch a large-scale offensive against mental illness (94).

The major concern of the teacher is not the person who may someday be hospitalized but is rather the maximum welfare of all children. The minor manifestations of lack of mental health are prime considerations in educational psychology. These symptoms include shyness, laziness, frequent absences, lack of application, inability to get along with peers and teachers, withdrawal tendencies, transitory interests not appropriate to one's age, and failure to work near one's capacity. Mental hygiene in the school is concerned with the problem of more effective daily living—interest, cooperativeness, vitality, adaptability, friendliness, and the ability to bounce back after disappointment.

The Teacher's Role in Mental Hygiene. Unfortunately, there is a dreadful lack of trained personnel—psychiatrists and psychologists—for the enormous task. Although teachers are not so specially trained, the incontrovertible fact remains that if teachers do not provide help some will never get it (272). Teachers *must* seriously study the meaning and principles of mental hygiene in order to function as adequately as possible in the job that is inevitably thrust upon them.

Teachers who have studied adjustment problems can help prevent mental ill-health by working with individuals. They can try to supply the child's fundamental needs. They can work in accord with basic principles of growth instead of fighting against them. It should further be emphasized that the typical child has no need for specialization. It will be to his advantage to have help in solving problems in normal, everyday situations. Teachers should, of course, recognize their limitations, and when they have any doubt that they are helping the child, they should seek the advice of experts.

In recent years, physical health has made tremendous gains because teachers have become aware of the symptoms of illness and have provided a first line of defense against it. Moreover, they have effectively taught the fundamental principles of health. Similar gains can be made in the area of mental health when teachers learn to work in accord with sound principles of psychology.

SOME FUNDAMENTALS OF MENTAL HEALTH

Mental illness is sometimes due to physical factors, such as malfunctioning of the physiological organism, disease, injuries, and poisons—over which teachers have little or no control. But much mental illness is

also due to environmental factors which deny to the individual a degree of satisfaction of certain fundamental needs.

The Need for Acceptance. There are some psychologists who trace the need for acceptance back to the womb. These people feel that the mother's acceptance or rejection of the unborn child affects its bodily chemistry and thereby establishes the basis for mental health or illness. Whether or not we wish to trace personality trends this far, the fact remains that wholesome acceptance of the child is heavily stressed by psychiatrists as a fundamental of mental health (99).

The ability of the teacher (or parent) to accept the child is an indication of maturity of personality. The study of psychology and mental hygiene can help one discern normal behavior. He will not then expect adult behavior and perspective from a child. He will know that the child's actions are not always synonymous with his intentions. He will regard deviations from desired behavior as indications of the fact that children are encountering difficulties in their growth. Acceptance means that we must see through the behavior to the living individual. The idea "I like you, Johnny, but I do not like what you do" must be conveyed to the child. A high school teacher looked at some discourteous boys and said, "You are too gentlemanly to act like that." The boys knew the teacher liked them and cared about what they did. They knew they were accepted despite their actions, and improvement was soon noted in their behavior.

The need for acceptance also is a matter of pupil-pupil relationships. A particular child needs to be not only with the group but *of* the group. The teacher can help by encouraging class members to welcome newcomers. Friendliness can be practiced by asking a particular pupil to serve as a host or as a big brother during introductions. This responsibility also extends to members of minority groups. The teacher can do much by pointing out the contribution each pupil can make to the smooth-running behavior of the group.

The Need for Companionship. This need, which is intimately related to the need for acceptance, is given particular emphasis by psychiatrists in stressing the seriousness of the symptoms of shyness or withdrawal (248). The teacher's task is to provide avenues for pupil-pupil contact. It will be of little value to suggest to the shy pupil, "You should be more friendly." This attacks only the symptom. It is necessary to find the causes of the lack of companionship and take steps to correct them. Among the more important steps is encouragement in the development of skills. Almost any skill will help the pupil build the confidence that will allow him to participate more vigorously in personal contacts.

It is well to observe that not all pupils can be alike in social competence. If a pupil who has few intimate friends seems to be well adjusted,

the teacher should not be too concerned. In short, the symptom of shyness takes on significance when it is accompanied by other symptoms of inadequate adjustment. This would mean, among other things, that the teacher might be adding unnecessary burdens of adjustment by insisting that a high school boy get out on the dance floor with some attractive girl. It could be that he enjoys watching more than he does participation.

The Need for New Experiences. It is a common experience of all people to be bored with routine and monotonous occurrences. Satisfaction of the need for a variety of experiences can be met relatively easily in the school. New subject matter, new activities, new approaches, field trips, the use of teaching aids and new responsibilities can help to satisfy this need. But the need for new experiences should not dim our view of the comfort of the routine and ordinary. All of us like to have conditions upon which we can depend. It is therefore necessary that some of the details of schoolwork be kept much the same from day to day.

The need for new experiences is particularly important because other needs depend upon this one for their satisfaction. For example, the need to develop feelings of security is dependent upon the pupil's ability to adjust to new situations. Hence, he needs the opportunity for experience in these new areas if he is to develop a versatile competence. Everyone needs to be considered a growing personality. Human beings need to satisfy their curiosity. Here again the need for encountering unique circumstances is apparent. There is also the need for mastery. One needs new experiences in order to explore various avenues that may lead to mastery of the individual's particular potentialities.

If the need for new experiences is not satisfied in the school, there is the distinct possibility that satisfaction will be sought in aberrant behavior, including delinquency. This, of course, does not occur only when new adventures are denied—any of the fundamental needs which are not satisfied, or are not on the way to being satisfied, will create tensions.

The Need for Success. One of the biggest jobs of the school is to provide a variety of tasks so that each child can experience some success. This cannot be done when the academic program receives more than a just share of attention. Numerous and varied chances for emotional, physical, aesthetic, *and* intellectual pursuits must be provided.

The Need for Independence. One sees the need for independence asserted very early in the life of the individual. Even before the baby begins to talk he wants to feed himself. Later, even before he gains real competence, he wants to dress himself and to tie his own shoes. Florence Goodenough states that one of the three most important needs of the child is opportunity for unhampered development. She states that permissive limits are considerably broader than many nervous people are

inclined to think (108, p. 670). It might be added that the permissive limits in school are probably much broader than many insecure teachers are able to admit. The teacher's role can best be executed by *counseling with* leaders. It may mean temporarily putting up with conditions one might wish to criticize. But, it should be remembered, experience is a great teacher—even the experience which is a failure.

A good many of the difficulties of adolescents stem from the desire to be independent—to be able to act without the prescription and direction of parents and teachers. It is a wise parent and an intelligent teacher who recognizes in these strivings for independence the seeds of genuine psychological maturity.

Children need freedom of opportunity in order to develop. This does not mean a lack of restraint or guidance—as some parents and a few teachers seem to think. It does mean that restrictions should not be arbitrary or imposed for adult convenience. Courage will be developed as the individual learns to cope with problems. Moreover, it is through freedom of opportunity to develop that one learns to live with the unavoidable.

Wise teachers recognize this need for independence in many of their methods of procedure. Current books on method and mental hygiene emphasize the following:

1. Permit children a voice in the selection of activities.
2. Encourage a wide exploration of objects and ideas.
3. Accept children as they are and in spite of their undesirable behavior.
4. Be slow to interfere with the inevitable pupil conflicts.
5. Praise youngsters for acts that show evidence of independence.
6. Encourage performances that reveal creativity rather than demanding adherence to formalized patterns (such as are involved in painting, drawing, and writing).
7. Challenge some of the statements made in textbooks and thus stimulate pupils to check the printed word against their own experience.

Help students to organize their own forms of home-room and school-wide student government.

The Need to Develop Tension Tolerance. The author has often been asked whether there is not a danger of removing too many obstacles from the developmental path of children. Theoretically it is possible to make such an error. Practically, there is little danger that such will be the case when the need for growth and for independence is recognized. There are, of course, parents who are overprotective in dealing with their children. But it seems impossible to make school so pleasant that it will prevent growth. Actually, one achieves the feelings of security that may be called "tension tolerance" by enjoying success in physical

and social activities. Disappointment and discouragement need not be thrust on growing children. They will encounter tension as they explore their world aggressively.

The big problem in the development of tension tolerance is the matter of balance. A balanced program cannot be described in precise terms. It must necessarily depend upon present growth status, upon the circumstances involved, and upon the goals one has posited. Some general suggestions for the maintenance of this balance can be given:

1. Teachers must avoid giving too much help—which is so easy to do in arithmetic, spelling, and geometry.

2. A task which is difficult but not impossible, may warrant some help. When the job has been done, words of praise are not necessary, though they may help.

3. Goals should be attractive, *i.e.*, understandable and important to the child.

4. Goals should be immediate. This word "immediate" is a relative term. Goals should be achieved "this week" in the elementary school, while a senior can work well for the goal of graduation in the spring. Tension tolerance requires balance between help and no help, between the specific and the abstract, and between remote and immediate goals.

The development of tension tolerance may be likened to the acquisition of resistance to disease. Some resistance is gained through immunization and inoculation. In the area of mental hygiene and education this might be exposure to planned experiences which are scaled to developmental levels. Some resistance is gained through the development of good health. The mental health parallel is to encourage the development of skills and knowledge that will enable one to overcome obstacles. The idea of deliberate exposure to disease which prevailed until recent years is no longer extant. Similarly, in mental hygiene we seek to avoid those conditions which are uniformly productive of mental illness.

Other Basic Needs. The foregoing statement of needs should be regarded as tentative and representative. The teacher can easily translate the concept of needs into practical educational procedures that will be conducive to mental health. V. T. Thayer and others have formulated a statement of the needs of adolescents that closely parallels some of the statements of the objectives of education. These needs are found in four areas: primary social relationships (home and school), community and civic relationships, vocational and financial relationships, and (bound up with all of these) personal living (263, p. 44).

Recognizing needs is only the beginning point. It remains for teachers to devise methods and techniques that will, to the greatest extent possible, provide for their satisfaction.

MENTAL HEALTH HAZARDS IN THE SCHOOL

While no teacher would consciously deny the importance of attempting to satisfy fundamental human needs, the fact remains that uncritical acceptance of certain traditional school practices interferes with such satisfaction. We shall deal, in this section, with certain of these practices with a view to correcting them.

Lack of Friendliness. It would be an exaggeration to say that there is a tradition of unfriendliness in the school. Yet the concept of the teacher as a stern disciplinarian and the attitude that "familiarity breeds contempt" tend to prevent a genuinely friendly atmosphere in the school. W. Carson Ryan, after spending a year visiting schools throughout the nation, announced that although simple friendliness was obviously desirable and seemingly easily obtainable, he found it in "shockingly" few places. In the school, where mental health is so important, friendliness is a prime requisite (231, pp. 31*f.*).

Among the causes of this situation are the following:

1. Some citizens do not have a thorough understanding of the needs of children. They often criticize teachers who depart from the tradition of subject matter and seek to satisfy needs.

2. School administrators, under pressure from the public, find it impractical to establish an air of friendliness with teachers. Yet such friendliness might be just the thing which would encourage teachers to be genuinely friendly with pupils.

3. Teachers lack the understanding and sense of freedom which would encourage them to depart from hampering tradition.

Teachers should be selected who are emotionally mature. But it should be remembered that emotional maturity is a process, not an achievement. It is therefore necessary that all teachers undertake the gratifying task of continual self-improvement. They must, through the study of educational psychology, mental hygiene, and general psychology, seek a better understanding of their childhood and adolescent experiences. They should examine critically various statements of the objectives of education and appraise the practices which purport to implement these objectives.

The lack of friendliness should probably be regarded as a symptom as well as a cause of hazardous school practices. As other mental health hazards in the school are removed it will be easier for teachers to become friendly. It has been emphasized that subject matter *as a goal* is such a hazard. The "achievement tradition," in which the teacher focuses upon the child's learning certain facts and is irritated by anything that interferes with that goal, makes accomplishment primary and friendliness

secondary (216). Grades and nonpromotion practices are other such hazards (20, pp. 226f.).

Psychiatrists and psychologists who use the words "security," "acceptance," "freedom," "permissiveness," "individual differences," and "understanding" are emphasizing the significance of friendly relations in achieving good mental health.

Competition. We live in a competitive society, and a reasonable use of competition in the school cannot be dogmatically condemned. As stated previously, competition should take place between groups and individuals where there is the possibility of success or winning *on the part of all concerned.* Competition with one's own previous record is a desirable source of motivation. Competition should be the friendly and cooperative kind that minimizes jealousy and suspicion. It can become, and often is, a mental health hazard if competition is between unequally matched individuals. Scholastic competition which pits slow learners against bright children makes for feelings of insecurity, inferiority, and frustration in some and unwarranted egotism and unjustified feelings of superiority in others. A sense of achievement can be realized by a group. The teacher who wishes to provide motivation without the hazards of open competition can stress these cooperative activities (139, p. 146). The cooperative aspect of American life is just as basic as competition; in fact, it has been said to be our *outstanding* characteristic.

Uniform Grades. Traditional grading systems can be criticized on much the same basis as unbridled competition. If the basis for grading is mastery of content, inevitably some youngsters will receive discouraging grades and others will learn to get by with a minimum expenditure of effort.

Even if there were not wide individual differences among pupils there would still be valid criticisms of uniform grading. One of these is the factor of unreliability. No two teachers give the same grade for work that is equivalent in terms of mastery (52). Experiments have been conducted which show that one paper graded by several teachers will receive scores varying as much as 50 points on a 100-point scale. Moreover, the same teacher will differ in scoring a paper which he has previously marked. These conditions exist when the teacher does not know which student's papers he is scoring. When he does know whose paper he is marking, the situation is complicated by what is known as the "halo effect." This is the tendency of a teacher to be influenced by previous impressions of the pupil. It is sometimes difficult to believe that slovenly, discourteous, self-centered Paul makes a superior score.

It has been discovered repeatedly that teachers do not agree on what a grade means. Some believe that it relates only to subject-matter mastery; some believe that effort and application should be recognized; and

others believe that the child's total behavior (academic, social, personal conduct, and indicated ability) should be taken into consideration. All of these variables tend to make uncertain the exact meaning of what purports to be an exact grade. It is not difficult to visualize the perplexity, uncertainty, and confusion of a pupil who is subjected to these uncertain and variable practices.

Another criticism of uniform grading stems from its lack of similarity to life situations. There are those who argue that grades are lifelike—that children must face all kinds of competition in the working world. It is true that we compete in later life, but competition is selected and classified. In public schools "natural selection" is not allowed to operate. The consequence is, to use boxing terminology, that featherweights, lightweights, and heavyweights are all thrown into the same ring. It is not generally recognized as unfair to grade pupils on such an unselected basis. But in adult life one selects his own competition. Truck drivers compete with truck drivers. Grocers compete with grocers. Professional workers compete with others in their own profession.

Fortunately, the traditional grading system is undergoing constant examination, and many attempts are being made to replace it with more constructive approaches. No uniformly satisfactory system has been evolved as yet. But, from the standpoint of present perspective, two factors will probably be included in improved marking practices. One is that the individual will be compared with himself; that is, his marks will be made on the basis of the progress he has made from his own starting point. The second is that marks will be based upon more than academic growth alone and that social, emotional, physical, and environmental factors will be taken into consideration.

Promotion Practices. Many schools now practice so-called "block promotion" or "uniform promotion." It is felt that if a youngster does as well as he can he should not have the experience of failure forced upon him. Exceptions are made only on the basis of considered judgments involving many factors in each child's life. For example, if a child has started school at a very early age and has not yet attained the social, mental, and emotional age which will allow him to profit from first-grade experience, he may be held over for a year. But retentions in later grades are much less likely to be condoned. That this practice is psychologically sound is attested to by the fact that when trial promotions have been tried they work out successfully in a majority of cases. Some experiments indicate that as many as 85 per cent of trial promotions work. Obviously all those who are retained are burdened by the sense of failure. An additional hazard to repeating a grade is that the youngster has to make an entirely new set of social adjustments—

this, added to his perplexity in academic work, makes repetition emotionally difficult.

The practice of nonpromotion runs counter to what is now known about the nature and extent of individual differences. Nonpromotion contradicts such aspects of mental hygiene as satisfaction of needs and the development of the whole child. The practice assumes that education consists of learning facts; but modern psychological and educational theory stresses that facts are only a part of the total problem. When practice catches up to theory, nonpromotion will no longer be a problem. Each child will be working at a level appropriate for him regardless of grade placement.

Actually, the practice of repeating a grade or of double promotions are concomitants of the grade system in general. It may be a long time until the idea that grade classifications are essential is eliminated. In the meantime, it will be necessary for teachers to realize that pupil differences will exist in any one grade. Teachers are coming to accept the idea that they do not teach the first, second, or eighth *grade*. They teach *pupils* of first-, second-, or eighth-grade ability. Classifications of pupils will, it seems certain, be made on the basis of broad categories of maturation rather than on the single basis of subject-matter mastery.

Fear of Failure. Fear of failure is part of both promotion and marking practices. It need only be said here that the negative incentive, of fear of failure, is much less productive of successful effort than is knowledge of progress. The satisfaction of curiosity, the desire for growth, and the desire to be accepted and approved by one's teachers and peers can operate without the fear of failure.

Homework. The practice of giving homework to pupils is no doubt carried out with the best of intentions. However, like the above practices, homework is increasingly being viewed as a doubtful means of stimulating growth. There are several reasons for questioning the educational values of this practice. The child needs time to develop his own resources, to engage in physical exercise, and to gain practice in social relationships. Play is important because it will develop muscular coordination and social skills. It is also valuable in exercising more of the facets of the total personality. Another reason for questioning the value of homework is that it is likely to increase the already perplexing differences in ability and accomplishment. The youngster who is already doing well in school generally has interested parents who will provide good conditions and resources for study. Other pupils may have chores to perform in out-of-school hours and have little encouragement and limited resources. The result is that the better students forge still further ahead and the slower ones lag further behind.

Much the same situation exists at the high school level. But some who agree that homework in the grades should be eliminated feel that homework in high school is good training for college work. Actually, the study skills necessary in college can probably better be taught in the school than at home. It has frequently been observed that parents, though they may be expert teachers of other people's children, are among the world's poorest teachers of their own children, because they become emotionally involved. If the high school student has learned *not* to depend upon getting his work at home he will tend to develop better work habits while at school. Moreover, the many pupils who do not intend to go to college will not be stimulated by the motive of higher education. If the student has learned to capitalize on his time while in high school the additional hours of study required for college work can easily be added *when* he is surrounded by other students, all of whom will find evening study advantageous.

Exceptions to the above generalizations can probably be made at both the elementary and high school level. Homework for those who are absent from school because of illness, quarantine, or an untimely family vacation will not interfere with well-rounded development. However, in these cases, a slow return to normal work after an illness is advised. Homework of a special nature that cannot be advantageously performed in class may add to the interest of the school tasks. Interviewing a family member or friend who has had a unique experience or traveled in an unfamiliar land may have its place. Building a model or setting up an experiment at home may enrich the schoolwork of the entire class. But these are ways of meeting individual differences, not uniform prescriptions.

Eliminating Mental Health Hazards in the School. Many of the hazards in the school can be eliminated if teachers and administrators will examine their practices in terms of the fundamental needs of human beings and in terms of the stated objectives of education. Substantial steps toward eliminating hazards will be taken when more teachers recognize that psychology must be made to operate in a functional manner.

POSITIVE FACTORS IN MENTAL HYGIENE

Providing for Individual Differences. The recognition of individual differences is the foundation of our democratic society. Each person must do his unique part in improving the life of all. Youngsters of apparently equal ability differ widely in their interests. Some are interested in sports, while others are devoted to making model planes or doll dresses. Some find adventure in reading, while others are content to sit for hours before the television set. Some like to experiment with home chemistry sets, while others prefer to spend much time with their play-

mates. Of course, many, and perhaps most, individuals find it perfectly possible to perform the tasks delegated by teachers. But the artful teacher will become aware of divergent motivations and suggest books and references that bridge the gap between schoolwork and other interests.

Differences in motivation may be explained on the basis of varying home and community backgrounds. Some parents regard education as a most important aspect of development, while others, perhaps but few, regard education as an unnecessary delay to the child's becoming a wage earner. In some communities it is the custom for most of the youngsters to go on to college after graduation from high school, while in others only the exceptional case is concerned with such a future. Differences in motivation stem from the family atmosphere to which the pupil is subjected. One can scarcely be expected to devote himself wholeheartedly to school tasks if he is thinking of the scolding he will probably get when he arrives home. The teacher can help compensate for emotional stress by seeing that the entire program of the school becomes flexible and functional.

Providing for Creative Expression. Teachers who provide opportunities for creative expression will help to improve their students' mental health. Free and spontaneous play, writing, painting, and drawing are among the important media for such creative expression. Many teachers at all grade levels and in high school are using such media to enrich the more academic programs. It is felt that spontaneous expression gives the teacher and pupils the following advantages:

1. The teacher may regard creative expression as a projective technique. That is, what the child freely puts into his play, his writing, and his pictures *is himself*. He plays, writes, and draws what he feels and is sometimes unable to vocalize. The teacher uses his activities and his productions as *clues* to a better understanding of his unique personality.

2. Creative expression can provide variety in the school program. Often interest in creative activities will serve to motivate pupils to do the work which is more academic. A sophomore boy who had taken little interest in class recitation was permitted to draw some prehistoric animals on the board to be used in connection with historical studies. In order to make authentic pictures he had to do some reading, and his teacher noted that as the studies progressed he gradually took a more active part.

3. Students can work off tensions and frustrations through creative expression. A child who is jealous of a sibling may not attack his competitor, but he can with impunity draw a picture in which his brother or sister suffers chagrin or injury. A high school pupil may not wish

to reveal feelings of hostility toward a parent or other family member, but he can write a story presumably about other people. Dramatics are also becoming increasingly important as a mental hygiene technique for the classroom teacher (239).

Making Schoolwork Meaningful. Children are not miniature adults. The things they like and spontaneously do and the goals they consider important are different from those of adults. Important differences are that for children (1) goals must be more immediate and (2) activities must be more specific and concrete. Teachers must ever be on the alert to make the books and courses of study that have been devised by adults meaningful to children.

Some of these generalizations can be illustrated by using writing as an example. Drill on word selection, sentence composition, and punctuation has been found to be relatively fruitless in terms of the time spent. However, if a letter is to be written requesting a speaker or materials for the class and the teacher indicates that the best letter will be sent, the typical result is that real effort is expended and good results are obtained. The goal is immediate, related to a need, and specific.

Democratic Procedures. Some of the attitudes that are commonly considered democratic are faith in the worth of *each* child, confidence in the soundness of pooled opinion, belief in the ability of children to face and solve their own problems (especially a belief in their *good* intentions), and patience with the comparative slowness of democratic procedures. It might well be observed that no teacher claims democratic procedures are particularly easy. Those who have tried them know that they pay dividends in terms of pupils' steady improvement in socially oriented conduct.

Some of the more common democratic procedures in the classroom are (1) allowing pupils to discuss and choose (under direction) the activities and purposes of the class, (2) permitting pupils to become increasingly self-directing in their behavior, (3) helping pupils understand the necessity for certain behavior rather than demanding conformity to imposed regulations, (4) providing opportunities in accord with the individual's ability to comprehend and profit from them, (5) working with pupils on a cooperative and congenial basis, (6) taking time to talk with and listen to those who wish to participate, and (7) encouraging cooperative group work.

If democratic methods are difficult and cumbersome, it might be well to ask ourselves why so much stress should be placed on freedom and self-determination. An answer is suggested by Lawrence K. Frank: [2]

[2] Lawrence K. Frank, *Personality and Culture*, Danville, Ill.: The Interstate, 1948, p. 18.

Is the police state, controlling irresponsible citizens, to be our idea of a planned society, or are we going to try to develop and educate personalities who can and will be responsible for maintaining and advancing social order? These are the basic questions we face in every area of group life, especially in our educational programs for children, for youths, and for adults. Here the crucial issue is whether we will seek to rear obedient, submissive individuals who will bow to authority or to foster personalities capable of self-discipline and friendly, co-operative living.

Democratic procedures are likely to go far in meeting such fundamental human needs as the desire for independence, the desire for companionship, the need for recognition, the need for security (security being dependent upon the person's ability to meet and solve problems) and the desire for new experiences. Democratic procedures are slow, but so too is growth toward better mental health, the reward of which is a richer life.

SUMMARY

Psychological Principle	*Practical Application*
Mental hygiene is a way of life.	Mental hygiene should be applied in all teaching and learning tasks.
The aims of mental hygiene closely parallel the aims of education.	A periodic review of educational aims will implement mental health aims.
Mental health is a concern of everyone.	Unless the child gets help from his teachers the chances are small that he will ever get assistance.
Mental health is subject to identifiable factors, just as is physical health.	Vastly improved mental health for everyone is a practical goal.
Mental health depends upon a feeling of being accepted.	Teachers must accept all children for what they are and can be.
Mental health demands that pupils have new and successful experiences.	Variety and challenge within pupils' capabilities must be systematically provided in school routine.
Good mental health is characterized by a feeling of independence.	Teachers must forego the comfort of autocratic methods for the enduring benefits of democratic procedures.
Mental health requires a tolerance for unwelcome circumstances.	Teachers can help pupils bear inevitable disappointments by warmly accepting them as individuals.
School handicaps to mental health include lack of friendliness, unequal competition, uniform grades, single-criterion promotions, homework, and autocratic methods.	Functional recognition of individual differences must be made, improved methods must be sought, basic purposes of education must be examined, and friendliness must prevail.
Creative expression is a wholesome means of releasing tension.	Relief from tension can be afforded by developing a permissive atmosphere.

Teachers quickly influence, through democratic methods, the behavior and attitudes of pupils.

Teachers must be patient with the difficult but rewarding tasks inherent in democratic procedures.

PROBLEMS AND EXERCISES

1. Cite evidence for or against the concept that mental illness is a more serious problem now than it formerly was.
2. What evidence have you seen in the classroom that indicates the need for more widespread knowledge about the facts and principles of mental hygiene?
3. Describe, in terms of your own experience, some instances which show the teacher's role in the mental health of pupils.
4. Suggest a number of ways in which the tension tolerance of children might be strengthened.
5. Which of the handicaps to mental health in the school do you consider to be most serious? Which do you consider least serious?
6. In what way would a functional recognition of individual differences serve to eliminate some of the handicaps?
7. Make an extensive list of factors that might well be considered in creating a wholesome classroom atmosphere.
8. Suggest a number of ways in which schoolwork can be made more meaningful. Do this by grades and by subjects at the high school level.
9. Make a list of classroom procedures that involve democratic procedures. Compare with the lists of classmates and work out improved statements. Then consult: *How Democratic Is Your School?* U.S. Office of Education, 1949.

SUGGESTED ADDITIONAL READINGS

McCrow, Lester D., and Alice Crow, *Mental Hygiene*, 2d ed., New York: McGraw-Hill Book Company, Inc., 1951, Part III.

These chapters deal with such aspects of the school as curriculum, the teacher, supervision, behavior control, diagnostic and remedial techniques, evaluation, and guidance, as they are related to the over-all problem of mental health.

English, O. S., and S. M. Finch, *Emotional Problems of Growing Up* (Better Living Booklet for Parents and Teachers), Chicago: Science Research Associates, Inc., 1951.

The nature and origin of emotional problems are described in this booklet. Some of the crises which arise in childhood and adolescence are used as examples. The search for causes of difficulties is emphasized, and the need for recognizing symptoms is stressed.

Jersild, Arthur T., *In Search of Self*, New York: Teachers College, Columbia University, 1952.

A challenging presentation of the means by which a child evaluates himself and his worth. Jersild describes what the school *and the teacher* can do to help the child toward better mental health.

Redl, Fritz, and William W. Wattenberg, *Mental Hygiene in Teaching*, New York: Harcourt, Brace and Company, Inc., 1951, pp. 187–420.

Part C, "Classroom Applications," contains the following chapter titles: "Mental Hygiene and School Learning," "Group Life in the Classroom," "The

Psychological Roles of Teachers," "Diagnostic Thinking in the Classroom," "Influence Techniques," "Some Common Dilemmas Teachers Face," "Children Who Need Special Help," "Working with Parents," "Teachers' Problems," and "Limitations of Mental Hygiene in Education."

AUDIO-VISUAL MATERIAL

Feelings of Hostility, McGraw-Hill Book Company, Inc., 330 West 42d St., New York 36. (27 min, BW, sd.)

The case of Claire from early childhood, when her father dies suddenly, to her development into an outwardly successful career woman, is shown. A trailer reviews and emphasizes significant life episodes.

Feelings of Rejection, McGraw-Hill. (20 min, BW, sd.)

A socially maladjusted young woman, the victim of blinding headaches, has the conviction that she is not wanted—that others impose upon her. Factors in her childhood and adolescence that contributed to her condition are portrayed.

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APPRAISING FOR FUTURE GROWTH

THERE IS ample reason to assert that educational practices are constantly improving. But it is certain that we could more fully capitalize upon existing knowledge of psychological principles. Rote procedures, uniform curricula, stern disciplinary procedures, and emphasis upon subject matter are becoming rarer today. But educational growth, like the growth of the individual, is a slow and steady process. The major hope for consistent improvement resides in those who are about to enter the teaching field.

No doubt there will be areas of knowledge, as yet unsuspected, available to later generations of teachers. The key to this yet undiscovered information, as well as to the use of existing knowledge, is to a large measure dependent upon techniques of evaluation. It is necessary to know how effectively or ineffectively present data are being utilized. In this chapter, an attempt will be made to show how evaluation techniques can help in making more effective use of educational psychology.

THE CONCEPT OF EVALUATION

Grading. The appraisal of pupil progress has, in the past, been largely a matter of "measuring" status and growth in subject-matter areas—with perhaps more emphasis on status than on growth. Status in this case was determined by the grades a pupil received. Many times the grade was the teacher's opinion of how a particular pupil compared with his classmates. Formal, "standardized" measures helped to objectify the teacher's opinion, but the measures were sometimes not fully comprehended. Grades were still based on achievement tests and the degree to which age-grade standards or other norms were approximated. Now again there is dissatisfaction with the concept of grading. A number of approaches are currently being tried, indicating that some substantial improvements are in the making (298).

Evaluation. The word "evaluation" suggests that measurement by tests and examinations is not enough. In evaluation, emphasis is placed on broad

changes in personality and the achievement of interrelated major objectives of education (229). It has been pertinently said that measurement and grading are *atomistic*, whereas evaluation is *organismic* in scope. That is, grading focuses attention on minute and often independent elements of development. Evaluation considers many interrelated facets of personality. Evaluation has as an aim the integrating of the individual and the correlating of subject matter.

Awareness of the inaccuracy of tests, combined with the current emphasis upon emotional, social, and intellectual growth, indicates the importance of evaluation. Paper-and-pencil tests and simple letter or numerical grades cannot cover all the aspects of sound education that need attention. Evaluation capitalizes upon tests, but in addition utilizes data from anecdotal records, interviews, questionnaires, pupil profiles, examples of past work, and reports from doctors and nurses to obtain a complete view of the child. There is still a need for test results (achievement, ability, diagnostic, etc.), but it becomes clear that test data must be interpreted. An I.Q. score must be viewed in terms of age, sensory acuity, cultural background, and emotional stability. An achievement-test score must be interpreted in terms of ability, competing interests, past opportunity, and personality trends. These aspects are not likely to be overlooked by the teacher who has grasped the idea that Johnny Jones is to be evaluated, not graded.

PERSONALITY EVALUATION

Interviews. It is important that objective data be used in evaluating the personality adjustment of the child, *but it is no less important* to know how he feels about the circumstances and conditions which surround him. The interview is helpful in obtaining this information. A twofold problem is involved. First, the teacher must know what kind of questions are most likely to bring results. Second, there must be a high degree of rapport, so that the pupil will feel free to respond.

Questions which probe into relationships with parents, siblings, and out-of-school playmates may provide data on adjustment. Questions about the pupil's spare-time activities, his interests, and, in the upper grades and high school, his vocational aims will provide clues. Such information will suggest study materials for the pupil that can more quickly come to be continuing pursuits. Building on the interests discovered in interviews tends to make the pupil increasingly independent in his study and investigations. For example, one teacher, who was concerned about the lackadaisical schoolwork of an eighth-grade boy, discovered that he was interested in electricity. She made him responsible for the lighting effects in a stage production. He planned the arrangement of footlights,

spotlights, and color lighting, and under the supervision of an electrician he installed the necessary equipment. His interest spread to the construction of stage sets and he learned the play thoroughly. His acceptance by the group as well as his increased feeling of personal worth spread to the point that he applied himself more vigorously to academic work.

The securing of rapport is to a large extent dependent upon the teacher. Some find one approach more effective than another. But it can be said that the following are productive of rapport: knowing the pupil (his name, interests, and abilities), liking him despite objectionable behavior, avoiding the show of emotional or moral shock at some of his expressions, expressing interest in his interests, and seeing to it that he has an opportunity to make a contribution to the group and to share in pupil activities. Above all, the teacher must be genuinely friendly (225, pp. 51f.).

Interviews should be designed to encourage the pupil to solve his own problems. Specifically, instead of launching immediately into "good, sound advice" the teacher should encourage the pupil to make his own suggestions for improvement of behavior. The evaluation which a pupil makes of his conduct has proved to be much more productive than the gratuitous advice of teachers. The word "interview" itself suggests this emphasis—a viewing between two persons.

Observation. Teachers can learn a great deal about the personal and social orientation of pupils if they will take time carefully to observe them at work and at play. Instead of hastening to correct questionable behavior, they should permit children enough freedom to work out their own solutions. Observation does not give any answers, but it certainly provides clues for defining problems.

> To be a keen observer, one has to have not only adequate sense organs but real interest in the thing to be observed. Fortunately, there are very few of us who are not to some degree interested in watching children. But sometimes our attention is so fully occupied with subject matter, or group organization, or our own prestige, that our observation of each child as a person becomes perfunctory, except when his behavior is directly related to one of these interests. If our observation continues to be thus limited habitually, we cannot know very much about any one of our pupils.[1]

It is apparent that observation leading to constructive evaluation is neither incidental nor accidental. Systematic notes on what has been seen will serve a double purpose: They will make the teacher increasingly aware of what is important, and they will provide an inclusive record. An inexpensive card file for recording comments will soon become a valuable reference in suggesting avenues for future growth.

[1] Herbert R. Stolz, "The Art of Observing Children," *NEA Journal*, 27:240, 1938.

Formal Instruments. Two formal instruments for appraising personality orientation are readily available for classroom use. One is the personality inventory, or adjustment inventory, and the other is the sociogram. Inventories are mainly designed for the upper grades and high school, though some can be used from the fourth grade up. Results are typically given in percentile ranks on such items as home adjustment, social adjustment, school adjustment, self-reliance, attitudes, beliefs, feelings of worth, etc. However, it must be observed that the score on such tests is *approximate* and *representative.* Thus, interviews, observations, other teachers' reports, and supplementary test data should be used in connection with the formal inventory.

The prospective user of personality inventories must be strongly warned against putting too much credence in them. The author believes that they provide a convenient point of orientation for an interview. That is, one can determine what area of a child's life is causing difficulty. The interview can then be directed toward this area. But taking a score or percentile rank from the test is another matter. An authority on personal adjustment has stated that our great need for help in this area leads us to accept instruments of "very low objective value" (238, pp. 26). Another authority finds it surprising that personality inventories continue to be widely used despite their questionable features (63). It seems at present that one should take a dim view of the scores on the questionnaires. They may have value in reducing the time needed to discover the area of difficulty, but the score does not give a sufficiently accurate view of the individual to aid in diagnosis (83).

Sociometry (see the chapter on Emotional Aspects of Education) is an easy and valuable approach to the evaluation of social adjustment. Said one teacher, trying the sociogram for the first time, "I was amazed at the results. I thought I knew my pupils very well, but I learned that some of the ones whom I thought would be frequently chosen were not very popular. Some whom I thought to be rather lonesome individuals were in reality quite attractive to their classmates." Her evaluation of the pupils became more realistic. She was able to group the pupils so that some of the disciplinary problems she had been encountering diminished or disappeared, and it is likely that her evaluation made possible the organization of experiences in social relationships that were conducive to further personality growth.

Other formal techniques for personality evaluation include analysis through play activities and analysis of the child's art products. The Rorschach Blots and Murray's Thematic Apperception tests are further techniques for understanding personality. However, these techniques must be used by carefully trained technicians and will not ordinarily be used by classroom teachers.

EVALUATING SCHOOL PROGRESS

Grading. Many youngsters in school today and nearly all teachers or students preparing to teach have had their school progress evaluated in terms of grades. Most of these grades are letter symbols which, on inspection, turn out to represent a numerical system. We would have thought that the older systems of percentages had been pretty well outmoded. For example, a report card of the year 1903 listed twelve subjects and the student was rated in various subjects at 97, 91, 93, etc. Later it was recognized that even a narrow range of subject matter could not be evaluated this accurately, so letter systems were instigated. An A grade meant 90–100, B grade meant 80–89, etc. However, these letter grades are reconverted into grade-point averages that are accurate to three decimal places. And the third decimal place may determine the difference of getting or not getting an honor! Apparently little progress has been made in fifty years on the vexatious problem of evaluating school progress.

The absurdity of grading is widely realized. As mentioned earlier, experiments have been conducted which indicate that, even in such subjects as algebra and arithmetic, various teachers will grade the same paper with scores ranging from 70 to 95. It is reported that on one such experiment the scoring key was inadvertently mixed in with the papers to be scored. It received grades from below failure up. In addition to being unrealiable, grades make for painful and unwarranted discrimination. This is not the kind of evaluation that looks to future growth.

A number of current innovations in grading vary only in degree, while others seem to be based on quite different criteria and objectives (221).

Standardized Tests. Standardized tests (see Chapter 12) have a valid place in a program of evaluation. They are objective in that the answers are either right or wrong. This assumes, of course, that the answers can be evaluated on an absolute scale. Standardized tests are usually carefully designed to assure their validity and reliability. Norms are available for guidance in their interpretation. There are, however, certain precautions that must be observed in their use. Standard scores must not, for instance, be used to grade pupils, to judge a teacher's effectiveness, or to test the value of the curriculum. Scores should not be considered infallible.

The proper use of standardized instruments should be to give the teacher a more objective view of the child. They should help him to learn the child's present stage of development. Evaluation of the pupil's growth should be *partially* in terms of the pupil's growth from a given point (the score on a test at the beginning of a term) to a given point (the score on an equivalent test at the end of the term). The pupil

need not be judged in terms of the absolute score (grade equivalent of five in reading, etc.) or in comparison with other members of the class. The word "partially" means that the change of score from first test to retest is only part of the data upon which evaluation is based. A child who has experienced a prolonged illness, frequent change in residence, or an untoward event in his family circumstances or who is handicapped by some sensory defect should not be "graded down" because of his lack of accomplishment. Standardized tests will be most fruitful in evaluation when they are used as motivating influences. A pupil well below the average for his class may receive vigorous stimulation from knowing that he has made notable strides from where he was at a prior time. Since educational growth is characteristically slow, it is invigorating to have some objective indication of improvement.

The following kinds of standardized tests are of particular value in programs of evaluation which look toward the continuing growth of the individual pupil:

1. Intelligence tests give the teacher an *indication* of the present potential with which he has to work. Tests of mental ability translated into mental ages and grade equivalents, rather than intelligence quotients, provide the teacher with valuable clues. They *help* determine whether or not the pupil should be accomplishing at or near the norms for his grade.

2. Achievement tests are available for single subjects (arithmetic, English, reading, geography, etc.) and also in the form of batteries in which several subjects are included in one test. They enable the teacher to estimate progress over a period of time. Each subject is scored in terms of an age or grade equivalent. This enables the teacher to evaluate pupils in terms of their potential and previous status.

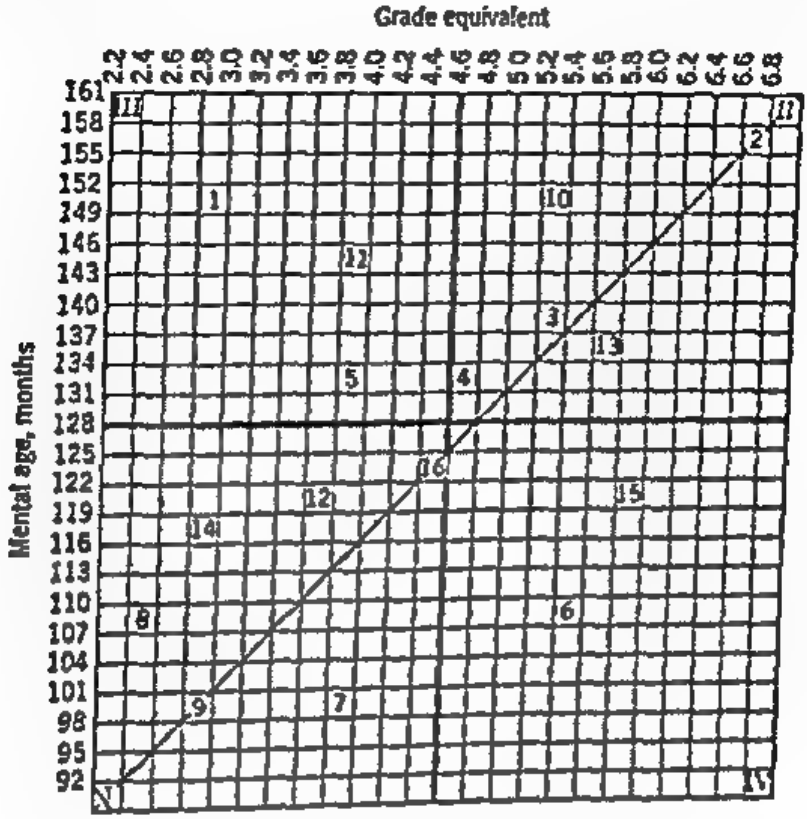
3. Diagnostic tests are also valuable in evaluating for growth. These tests, available in such subjects as arithmetic, language, and reading, *aid the teacher* in locating specific areas of difficulty within subject areas. They do *not* tell what should be done by way of remediation. The tests do not diagnose. They give *indications* which narrow the search for difficulties.

4. Inventories of interest aid in the discovery of more productive approaches for individual pupils and provide help in choosing the curriculums and vocations which will be most stimulating to them.

5. Personality tests help the pupil and teacher define specific areas of difficulty in personal and social adjustment.

A Technique for Using Test Scores. Dr. Victor N. Phelps of the Extension Division, Oregon State System of Higher Education, has devised a means of plotting paired scores on standardized tests. It is a visual device to help teachers understand the accomplishment that might

reasonably be expected of pupils in terms of their capacity. M.A. scores are plotted on one axis, with the median M.A. being the center line.



Pupil	M.A.	Achievement (grade equivalent)	Pupil	M.A.	Achievement (grade equivalent)
1	150	3.0	9	98	2.9
2	156	6.7	10	149	5.3
3	139	5.3	11	144	3.9
4	132	4.7	12	123	3.7
5	133	3.9	13	135	5.7
6	109	5.5	14	116	2.9
7	100	3.9	15	120	5.9
8	108	2.5	16	122	4.5

Fig. 18. Using standardized test scores to evaluate pupils. (Courtesy of Victor N. Phelps, General Extension Division, Oregon State System of Higher Education.)

Achievement scores are plotted on the other axis, with the standard grade score being the center line. Figure 18 shows the scores for a fourth-grade class just after mid-year. Each pair of scores is given one tally; thus, pupil 1, having an M.A. of 150 and an achievement equivalent

to third grade, is tallied at the intersection of the lines for these two scores.

After the sixteen paired scores are tallied, a line is drawn from the lower left-hand corner to the upper right-hand corner. Pupils whose paired scores are plotted close to this line (*e.g.*, 9, 12, 16, 4, 3, 13, 1, 2) should not be a serious concern of the teacher as regards accomplishment. Even though some are below average for fourth grade, they are achieving in approximate accord with their capacity. Pupils in quadrant IV (15 and 6) are doing well despite below-average ability. The teacher's concern would be to see that they are not unduly worried and tense or are not sacrificing valuable play activities in order to study. Pupils above the diagonal, in quadrant I (8 and 14), may well receive some help. Possibly their retardation is due to too much previously applied pressure. Quadrant III shows pupils (1, 5, 11) who are really retarded and should be studied for sensory difficulty, emotionally disturbed homes, tense sibling relationships, and lack of a sense of personal worth. Various remedial techniques can be tried after the specific difficulties are discovered. Pupil 10 (quadrant II) may profit from some encouragement (or discouragement) by being told that although he is above the class average he is not doing as well as he could and should.

This graphical representation of scores makes it easier for the teacher to see those who need special study. In the past, too often the teacher's major attention has been devoted to bringing pupils up to average, regardless of their potential.[2] Further, the child with high ability who was average or better in accomplishment (*e.g.*, pupil 10, Fig. 18) was neglected despite the fact that he was not working in accord with his ability. Such a device as Fig. 18 brings into bold relief those who merit special attention.

Teacher-Pupil Evaluation. The pupil's responsibility for growth is emphasized and clarified by the procedures involved in teacher-pupil evaluation. The first step, defining objectives, involves both group discussion and conferences with individual students. There must of necessity be a large number of objectives to fit the many activities of the school and the many variations between individuals. This recognizes immediately that the outcomes of learning are many and varied—not single and isolated (44, p. 37*f*.). A few representative items to be evaluated by the pupil and teacher might include (1) ability to carry out self-directed activities, (2) ability to perform problems in arithmetic appropriate to developmental level, (3) interest in varied pursuits, (4) skill in written expression, (5) skill in oral expression, (6) manifestation of courtesy in dealing

[2] It may help to remember that, by definition, 50 per cent of the pupils, in any terms of measurement, are below average.

with others, (7) execution of assigned or accepted responsibilities, (8) respect for school property and the property of others, and (9) attention to personal appearance. Thus academic subjects, personal interests, social habits, and attitudes toward citizenship are involved.

The advantages of teacher-pupil evaluation are seen in the fact that whatever marking system is used (if one is used at all) the pupil understands exactly what it means. He may not always agree with the teacher's evaluation, and the discussion which ensues will clarify misunderstandings on the part of both.

Teachers find that teacher-pupil conferences are no more time-consuming than is the attempt to grade accurately and conscientiously. Of course, if grades are assigned arbitrarily, teacher-pupil evaluation *is* comparatively time-consuming. The element of arbitrariness is reflected in one upper grade student's remark: "You should not expect to get a good grade the first six weeks, If you did, then you could not show improvement in later periods. Just wait, next time you will have some grades that are higher than the ones you now have."

While it cannot be claimed that teacher-pupil evaluation answers all the questions that might be asked, these four advantages are worth considering.

1. Evaluation clarifies the pupil's concept of what he is working for.
2. It stimulates the child to ask questions which he feels are significant to him.
3. It makes possible the formulation of progressively higher objectives that are appropriate to the individual's present status and potentiality.
4. It helps the pupil improve his ability to evaluate his growth.

Parent-Teacher Conferences. The fact that the home and family constitute the great part of the child's psychological environment indicates that bringing the school and parents together is good procedure quite apart from evaluation. The parent-teacher conference is thought by some to be the most promising method of evaluation which has been devised thus far (194). Three major advantages accrue. First, the teacher will better understand the human material with which he is working. Second, parents can come to a better appreciation of what teachers are attempting to do. Third, the pupil will profit from the positive view which the teacher is encouraged to take. That is, knowing that effective conferences start with remarks about favorable characteristics, the teacher will look more searchingly for the pupil's good points.

It has been mentioned frequently that learning should be specific and that goals should be definite. Hence, in a teacher-parent conference it has been found advantageous for the teacher to take notes. The parent may be given a copy so that suggestions can be more readily remembered and put into operation. Too, written notes mitigate the disappointment

of not having the old-time report card. Some teachers use a prepared form for recording pertinent items in the interview.

Bringing parents and teachers together results in a kind of evaluation that will foster vigorous child growth. Some feel that this procedure can be improved still further by parent-teacher-pupil conferences. There are, however, inherent shortcomings to the conference plan of evaluation that makes it necessary to search for still better methods. It is, of necessity, time-consuming. Unless administrators make conference time a part of the regular teaching load, it imposes too heavy a burden on teachers. Moreover, many parents are unwilling to give their time or find in the conference an opportunity to vent their resentments against the child or the school. Conferences are not particularly advantageous unless the teacher has the child for all-day sessions. This limits its use in high school and in departmentalized systems in grade school.

Despite the limitations and personal disadvantages, teachers who have experimented with the conference plan are enthusiastic. They feel that the increased motivation of the pupil and the greater understanding they have of him repays many times the effort involved. Said one such teacher, "It takes a lot of time; but it is time that pays dividends. The increased ability of pupils to accept the school and its challenges would be sufficient justification for its continued use. But, most of all, I now feel that the time previously spent in assigning marks was more than wasted. It hurt many of my pupils."

THE ESSENTIALS OF EVALUATION

The Definition of Goals. The first step in evaluating teaching and learning is to define the purposes of instruction (246, p. 7). It is not enough to examine the objectives of education. It is necessary to see these broad objectives *in terms of the particular pupil* one is teaching. For example, the objective of citizenship might include such subgoals as being responsible for school property, keeping the school grounds and classroom clean, executing assigned responsibilities, participating in group activities, observing rules and regulations, or voicing one's opinion in group discussion. Precise meanings of citizenship formulated by teachers will depend on the maturity level of their pupils. Other objectives of education should be examined to detect implications which are inherent in the broad statement.

Since learning takes place in a wide context, it is advisable that many persons be involved in the process of formulating objectives. This condition has been secured in some instances by teachers sitting together in committee to formulate the statements of specific purposes. In some instances the teacher has worked with pupils in such formulation. If pupils are not invited to define objectives they at least should be allowed to dis-

cuss and modify them. Whatever the technique used in formulation, the following tests should be applied to the statements in order that they may be productive of good learning and helpful evaluation:

1. Can the pupil understand the statement of the goal? This can be easily determined by having pupils tell what the statement means to them.

2. Can the goal be stated in terms of pupil behavior? The objective should be to accomplish some desirable change in the actions of pupils.

3. Is the goal related to the needs of the pupil? If the objective does not have meaning for the individual, the result is likely to be learning only at the low level of memorization and verbalization.

4. Can the goal be achieved by the pupil? This suggests the need for constant evaluation to meet present level of ability.

5. Is it possible to devise techniques for evaluating progress toward the goal? The answer to this question may result in the restatement of vague objectives.

6. Is the goal one which has both present and future reference for the pupil? This criterion will help in deciding which school activities are most desirable and least desirable. This is important in a society where the schools are called upon to perform more and more functions.

Description of Behaviors. The translation of objectives into behaviors is an important next step in present-day evaluation. It is felt that too often in the past goals were somewhat idealistically or even unrealistically stated. In order to make them meaningful and place them in a category where they can be evaluated, it is helpful to state them in terms of behavior. Thus, in one study in which an objective was to promote the ability to do logical thinking, the aim of thinking was in part stated by the following: [2]

a. Disposition to examine the logical structure of the arguments and to apply principles of logical reasoning to the study of these arguments.

b. Ability to distinguish between conclusions which do and ones which do not follow logically from a given set of assumptions.

c. Ability to isolate the significant elements in the logical structure of an argument as shown by distinguishing between statements of ideas which are relevant and statements of ideas which are irrelevant for explaining why a conclusion follows logically from given assumptions.

The relationship between a broad objective of education and the description of behavior is illustrated by the Educational Policies Commis-

[2] Eugene R. Smith, Ralph W. Tyler, and the Evaluation Staff of the Commission on the Relation of School and College, *Appraising and Recording Student Progress* (Adventure in American Education, Vol. 3), New York: Harper & Brothers, 1942, p. 113.

sion of the National Education Association. This committee stated four objectives: (1) the objectives of self-realization, (2) the objectives of human relationship, (3) the objective of economic efficiency, and (4) the objectives of civic responsibility. Each of these is described in terms of several types of behavior—illustrative of which is the breakdown of the fourth: [4]

The objectives of civic responsibility.
The educated citizen
—is sensitive to the disparities of human circumstances.
—acts to correct unsatisfactory conditions.
—seeks to understand social structures.
—has defenses against propaganda.
—measures a scientific advance by its contribution to the general welfare.
—is a cooperating member of the world community.
—respects the law.
—is economically literate.
—accepts his civic duties.
—acts upon an unswerving loyalty to democratic ideals.

Examination of the objectives listed above illustrates the need for continuous evaluation. Each teacher can ask himself the following questions:

To which general objectives could and should the subject I am working with be primarily directed?

What specific behaviors (attitudes, habits, knowledges, ideals, etc.) should this subject contribute to the general objectives?

What class and pupil activities will be likely to illustrate or indicate the behavior changes sought?

What teaching methods and teaching aids can contribute to an understanding of the objective on the part of the pupils?

What devices for evaluation will be most likely to help me and my pupils see the extent to which objectives are being realized?

The Instruments and Approaches Essential to an Evaluation Program. Two important points deserve mention. First, all knowledge of educational psychology must be brought to bear on the complex problem of evaluation. Second, no single instrument will suffice to evaluate the many phases of growth that are the concern of formal education. Since instruments and approaches to evaluation have been mentioned in various places throughout the text only a brief summary will be made here of the multiple approaches to comprehensive evaluation.

1. Teachers, together with their pupils and other teachers, should examine the broad statements of education to see which are particularly pertinent in the present situation.

[4] *The Purposes of Education in American Democracy*, Washington: Educational Policies Commission, National Education Association, 1938, p. 108.

2. Teachers, together with their pupils and other teachers, should translate the broad objectives into definable and achievable behaviors.

3. Intelligence tests should be used to give an indication of the pupil's present level of mental development and should be used to supplement other data in determining a profitable starting point for classroom procedures.

4. Standarized achievement tests should be used so that one has objective information regarding the pupil's growth in specific subject areas over a given period of time.

5. Diagnostic tests should be used to narrow the range of search for a specific area of difficulty for individual pupils.

6. Personality inventories should be used as clues to pertinent questions. Inventories may disclose felt difficulties which the pupils are unable to express orally.

7. Case studies should be used for pupils who are manifesting unusual difficulties of adjustment.

8. Interviews should always be used in interpreting such data as are listed. How the child feels is no less important than the conditions that surround and impinge upon him.

9. Anecdotal records are valuable in describing behavior that is difficult to evaluate by means of test scores or case-study data. The anecdotal record is a picture of the child in his typical mood and action.

10. Sociometry provides a graphic picture of interpersonal relations and gives clues to the grouping of pupils that will lead to more harmonious social relations and to social growth.

11. Home visits by the teacher have the double advantage of helping the teacher see the child in terms of his environment and of helping parents arrive at a more objective evaluation of the school. Both of these advantages have inherent value for the pupil.

12. Letters sent to the home by the teacher tend to get away from the stereotype of traditional report cards. Letters necessarily give attention to individual differences.

13. Teacher-made tests have their place in a comprehensive evaluation program. Such tests can be made to fit short units of study or brief periods of school. They can be made to fit the particular objectives that are dictated by the local situation.

14. Pupil diaries or logs can serve as a means of keeping the pupil informed of his progress. Teachers need but to indicate the items that are of educational significance. Diaries will help pupils become aware of the importance of radio listening, reading, informal visits, and leisure-time activities.

15. Rating scales and questionnaires can be used to supplement other bases for evaluation, such as personality inventories, objective test data,

and anecdotal records. Rating scales which ask the pupil to evaluate himself are of special value. The scales help one look to the future rather than simply emphasize one's past and present status.

16. Cumulative records which record all of the above data or, in some instances, preserve representative samples of the pupil's work should be regarded as an essential instrument of the evaluation program. Care must be taken that not too much material is allowed to accumulate in the folder. Test results should be recorded in appropriate places and the date noted—the tests themselves then being destroyed. Periodically the material should be examined to see whether it contributes to an understanding of the child. If not, it should be destroyed. Too thick a folder will discourage the teacher's use of it.

Emphasis on the Total Program. It has been emphasized throughout this book that the child as a learner has emotions, physical characteristics, and social relationships which influence the acquisition of intellectual information. The pupil cannot be separated from his home and family and community influences. Much of the recent progress in the field of educational psychology has resulted from recognition of this integrated wholeness of the pupil. Hence, in evaluation the emphasis must be upon the entire program of education. Evaluation is a *continuing* aspect of the learning process which involves the use of *all* the instruments available. If evaluation is made on the basis of one or two instruments the result is likely to be grading rather than evaluation. The aim of educational psychology is not just to understand but to understand so that better conditions for total growth may be obtained. The aim of evaluation is to point the way to further and continued development.

Finally, it should be remembered that evaluation is not just for the pupil but also for the teachers. Teachers should use evaluation throughout their entire career to determine where they are weak and how they can improve. Evaluation gives them an incentive to continued professional and personal development. Only through personal growth can teachers make their maximum contribution to the growth of children. Evaluation thus points the way to developing our greatest resource—the children and youth of our land.

SUMMARY

Psychological Principle	*Practical Application*
Psychological theory lays the base for educational progress.	Continuous evaluation provides an opportunity for improving teaching practice.
Evaluation is a process of determining the values of an enterprise.	The first step in evaluation is to state the aims or purposes of education.

Evaluation implies an emphasis on totality of growth.

Education is concerned with the entire personality of the pupil.

Grading is unreliable and invalid because one measure cannot reveal total growth.

Standardized tests are characterized by norms, validity, objectivity, and reliability.

Pupil participation in evaluation capitalizes on the importance of clear perception of goals.

Parent-teacher evaluation stresses an important aspect of the total environment of the child.

Goals can be clarified by defining them as pupil behavior.

A sound evaluation program will use many approaches and instruments.

The over-all purpose of evaluation is to chart the way for continued pupil and teacher development.

Many instruments of evaluation are needed to perceive the complex nature of a child.

Interviews, observation, and formal tests must be regarded as supplementary and complementary approaches.

For each item in evaluation the teacher must know precisely what specific skill or trait, etc., is being considered.

These tests should be a *part* of the total process of evaluation—but not the end result.

Teachers should confer with pupils in groups and as individuals to clarify goals and evaluate progress.

Parent-teacher conferences not only help the child but lay the basis for understanding between home and school.

Teachers find a starting point for describing behavior in the aims of education.

Each source of information should be regarded as *contributing* data.

Continuous evaluation should be regarded by the teacher as an opportunity and challenge to personal and professional growth.

PROBLEMS AND EXERCISES

1. Explain how emphasis on the processes of evaluation can serve to focus attention upon the application of principles of educational psychology.
2. Present arguments for and against the proposition that grading is a life-like situation.
3. Let it be assumed that evaluation requires subjectivity on the part of the teacher. Would this be an argument against evaluation?
4. Why is an interview such an essential part of personality evaluation?
5. Make a list of five or six things the teacher should look for while observing a pupil. Compare your list with that of other students and expand your list to include the best items.
6. Make a list of five precautions that must be observed in order to get the best results from standardized tests.
7. Should a pupil be told his score on an intelligence test?
8. Why are teacher-pupil conferences an integral part of effective evaluation?
9. Make a list of goals and types of behavior that might well form objectives for evaluation in the primary grades. Do the same for some subject which is commonly taught in high school.

10. How would you suggest overcoming the criticism that high school teachers do not know their pupils well enough to use conference methods of evaluation?

11. Do you think it is justifiable to evaluate teachers in terms of the progress that is made by their pupils?

12. What changes in evaluation do you think might come about as the result of holding to the view that the purpose of evaluation is future growth?

SUGGESTED ADDITIONAL READINGS

Fostering Mental Health in Our Schools, 1950 Yearbook, Association for Supervision and Curriculum Development, National Education Association, Washington, 1950, pp. 181–313.

Part III of this yearbook deals with knowing and helping children, specifically with anecdotal records, sociometry, informal talks with pupils and parents, creative products, sociodrama, group processes, and acceptance and clarification of the child's feelings.

Gould, George, and Gerald Alan Yoakam, *The Teacher and His Work*, New York: The Ronald Press Company, 1947, pp. 289–311.

The necessity for a program using many techniques and objectives is emphasized. Attention is given to the trend away from measurement to evaluation in terms of personality growth, attitudes, and growth in effective citizenship.

"Helping Pupils Evaluate Learning," in *Toward Better Teaching*, 1949 Yearbook, Association for Supervision and Curriculum Development: National Education Association, Washington, 1949, pp. 226–255.

This chapter cites examples of the actions and conversations that are a part of evaluation procedures. The many-sidedness of growth is emphasized. A check list devised by pupils to be used in teacher-pupil evaluation is illustrated.

Wrinkle, William L., *Improving Marking and Reporting Practices in Elementary and Secondary Schools*, New York: Rinehart & Company, Inc., 1947.

Some of the fallacies of older marking systems are indicated, and some of the difficulties inherent in new practices are discussed. The author admits that the final answer is not yet formulated and asks that teachers try some of their own devices in the light of the basic problems presented.

AUDIO-VISUAL MATERIAL

Assignment Tomorrow, National Education Association, 1201 16th St., N.W., Washington. (20 min, BW, sd.)

A portrayal of how teachers work cooperatively to foster healthier, better informed, and happier children.

We Plan Together, Teachers College, Columbia University, New York City. (20 min, BW, sd.)

The methods used in a core class can result in teachers' and pupils' working cooperatively to produce more effective learning situations.

APPENDIX I

THE CONCEPT OF CORRELATION

THE WORD "correlation" is a helpful one in psychology and education. It is a statistical term indicating *relationship.*

We frequently want to know whether two things have any connection. We may wish to know what effect a certain kind of home environment has on learning. We should like to have an answer to the question "Are athletes characteristically slow in academic work?" Partial answers to such problems are phrased in terms of correlation. Thus, the growth principle "Correlation rather than compensation is the general rule" means that there is a tendency for persons who are gifted in one area to be superior in other traits. If exacting measurements of the related traits are available, the degree of relationship may be expressed in terms of a "coefficient of correlation." This is a numerical expression of the amount of relationship between two factors.

If a number of individuals are measured in two things and the relative order, or comparative rank, of each individual is the same in both measures, the measures are said to be perfectly positively correlated. That is, the largest measure of one item (say I.Q.) is found in the same person who has the largest measure of another item (say vocabulary), and the next highest scores in both measures are found in the same person, etc., through the entire list, until the lowest scoring person in I.Q. has the lowest vocabulary score. This perfect positive correlation would be expressed as +1.00 (read "plus one, point, oh, oh"). This is *not* a percentage score. In some instances, it is conceivable that much of one thing would correspond to a lack (and to a corresponding amount of lack) of another. Thus, if the person scoring highest in I.Q. had the lowest vocabulary score, the next highest in I.Q. had the next lowest vocabulary score, etc., the correlation would be expressed as a perfect negative correlation, written as −1.00 (read "minus one, point, oh, oh"). Actually, such perfect correlations exist only in things subject to physical laws—not in terms of psychological measurement of traits now available.

Perfect positive correlation is shown in Charles's law: "The volume of a gas is directly proportional to the temperatures to which it is exposed—pressure remaining equal." That is, the greater the temperature, the greater the volume. There is a definite increase in the volume which corresponds to each degree of rise in temperature. Perfect negative correlation is illustrated in Boyle's law: "The volume of a gas is inversely proportional to the pressure exerted upon it—temperature remaining constant." That is, the greater the pressure, the less the volume—the more you have of one thing the less you have of another, and in proportionate amounts.

Human traits are less directly related than can be indicated by either a plus or minus 1.00. The relationship typically falls somewhere between no

correlation (0.00) and a high positive, but not a perfect, correlation. Thus, there is no relationship between hair color and I.Q. There is a slight positive correlation between size and intelligence (.10 to .25) but it is so slight that prediction for individuals would be foolish. The same thing may be said of correlations of good looks and intelligence—positive but slight. Measures of school achievement and intelligence may be more highly correlated (.40 or thereabouts), but still one cannot say that the highest pupil in I.Q. should or will be the highest-ranking pupil on an achievement test. Two different tests of intelligence will correlate still more highly (.70 or so) than do achievement and I.Q. Two forms of the same test will correlate still more highly (.85 or more). The meaning of coefficient of correlation may now be summarized roughly as follows:

1.00	Smoke drifts in the direction the wind blows and at the same rate.
.90	Two forms of a reliable test may correlate to this extent.
.80 .70	Different tests of the same trait may agree to this extent. Helpful in predicting probable future of individuals (success in school, etc.)
.60 .50 .40	Various intellectual traits may agree to this extent.
.30 .20	Just enough correlation to disprove stereotyped misconceptions but of no value in individual prediction. Helpful in indicating a trend or generalization.
.10 0.00 −.10	No connection between the two traits or measures.

Human traits are so fluid that measurement of one trait will differ from day to day for one subject. The sum of the scores of 30 pupils in I.Q. or arithmetic achievement will vary even if the measurements are taken on the same day (though individual fluctuations will tend to cancel one another). Hence, a paired set of scores will not consistently show the same relationship. For this reason, the concept of probable error is usually used with the coefficient of correlation. For example, the relationship between a set of reading scores and a set of I.Q. scores may be $.53 \pm .12$ (read "Coefficient of correlation of point five three, plus or minus twelve"). It means that if other correlations were computed with similar tests and subjects half the correlations could be expected to be between .65 ($.53 + .12$) and .41 ($.53 - .12$). The correlation is said to be significant if it is four or more times as large as its probable error.

In educational psychology, correlations are used to indicate the relationships between traits, between the results of two administrations of a test (coefficient of reliability), and between test results and other measures or estimates of the same trait (coefficient of validity).

APPENDIX II

BOOKS THEY TALK ABOUT

THE FOLLOWING titles are not supplementary to educational psychology. They are books that many teachers have read, enjoyed, and profited from. The list is for those students who seek to extend their horizons.

Benjamin, Harold, *The Sabre-tooth Curriculum*, New York: McGraw-Hill Book Company, Inc., 1939.

Several social and educational anachronisms are described in this stimulating and entertaining satire. Dean Benjamin shows that many teaching aims and procedures are revealing cultural lag.

Bowen, Catherine Drinker, *Yankee from Olympus*, Boston: Little, Brown & Company, 1944.

A glimpse into the life of a great man is usually stimulating. This biography of Oliver Wendell Holmes was heartily endorsed by many students. It shows how long it is possible for one to grow.

Cantor, Nathaniel, *The Dynamics of Learning*, Buffalo: Foster and Stewart, 1946.

This is not easy reading. It does challenge one to think through his life purposes. It expands and clarifies the role of the teacher in a complex, unnecessarily cruel world. It proposes that hope for a better future resides in highly skilled, professional teachers.

Clapp, Elsie R., *The Use of Resources in Education*, New York: Harper & Brothers, 1952.

This book is a description of two schools in action. It shows how practical and stimulating making the school a part of the community and the community a part of the school can be. It is suggestive of the way in which education might develop.

Cole, Natalie, *The Arts in the Classroom*, New York: The John Day Company, 1940.

The arts, including creative writing, are described as a basic vehicle for dynamic education. Teachers have frequently remarked, "I like the warmth—I like the challenge—I like the applicability," of this book.

Havighurst, Robert J., *Human Development and Education*, New York: Longmans, Green & Co., Inc., 1953.

Havighurst's booklet *Developmental Tasks and Education* attracted widespread interest in a short time. This expansion of the earlier booklet shows how education can serve to facilitate growth tasks at the successive levels of life. Psychological data are combined with a study of social class.

Hohman, Leslie, *As the Twig Is Bent*, New York: The Macmillan Company, 1947.

A psychiatrist presents down-to-earth suggestions for working effectively for the symmetrical growth of children. He evaluates new and old techniques in the light of contemporary theory. The book is readable and sound.

James, William, *Talks to Teachers on Psychology*, New York: Henry Holt and Company, Inc., 1899 (new ed., 1939).

It is said of James that he wrote psychology like a novel. The material, half a century old, is fresh and pertinent. It will provide practical suggestions for formation of attitudes and the selection of values.

Liebman, Joshua, *Peace of Mind*, New York: Simon and Schuster, Inc., 1946.

The author shows that the ancient teachings of Judaism and Christianity stand side by side with the lessons of modern psychology and psychiatry. Most people who read this book find much personal benefit.

Marshall, Catherine, *A Man Called Peter*, New York: McGraw-Hill Book Company, Inc., 1951.

This book is a biography of a man who lived effectively and happily because of his consecration to a great task. It is a book you have probably promised yourself you would read.

Perry, Bliss, *And Gladly Teach*, Boston: Houghton Mifflin Company, 1935.

This is the reminiscence of a great teacher and an antidote for the pessimistic and skeptical atmosphere created by some of our contemporaries. It focuses upon the lasting values which inhere in one's teaching.

Preston, George H., *The Substance of Mental Health*, New York: Rinehart & Company, Inc., 1943.

Suggestions are made for man's living with himself and others. The book is directed to parents, but Preston's insight and understanding are so delightfully presented that they will appeal to all. Humor and common sense are combined with scientific data.

Warner, W. Lloyd, *American Life: Dream and Reality*, Chicago: The University of Chicago Press, 1953.

This is a presentation of certain phases of the situation to which teachers must adjust. It uses social class, social mobility, minority groups, and democratic ideals to illustrate our dream of the future and our status at present.

Weber, Julia, *My Country School Diary*, New York: Harper & Brothers, 1946.

This book is the answer to faint-hearted teachers who feel they cannot provide for individual differences. Julia Weber describes how she did so with thirty-five to forty pupils in eight grades. Teachers who read the book are sometimes skeptical, sometimes encouraged, sometimes ashamed, but always challenged.

The following inexpensive editions, all published by Mentor Books, The New American Library, New York, will provide some readily available books for those occasions when you take time for constructive reading: Ruth Benedict, *Patterns of Culture;* James B. Conant, *On Understanding Science;* John Dewey, *Reconstruction in Philosophy;* Julian Huxley, *Man in the Modern World;* Margaret Mead, *Sex and Temperament in Three Primitive Societies;* Alfred N. Whitehead, *The Aims of Education.*

GLOSSARY

It has been indicated in the text that clarity of meaning in vocabulary usage is an aid to clear thinking. Attention to the terminology of educational psychology is therefore another step to a functional understanding of the subject. Of course, definitions are not enough. The student should not memorize the definitions; rather, he should try to form a concept of the word or term.

Some of the words in this glossary are familiar ones but may have a slightly different use from, or narrower concept than, the popular usage. Other words will probably be encountered only in educational or psychological literature. Whatever the category of a particular word, its understanding will contribute to improved thinking.

Ability. Refers to what can actually be done as contrasted to capacity—which is the potential for developing an ability. Developed capacity is an ability.

Ability grouping. A subdivision of students into groups so that the range of individual differences is narrowed. Ability grouping may be made on the basis of one kind of measure or may consider several correlated measures.

Homogeneous grouping is *not* a good synonym.

Active recall. Remembering or recalling without the use of aids or reminders.

Remembering without specific and concrete clues.

Adolescence. A phase of development which follows childhood and precedes maturity. Sometimes referred to as the "teen age." Roughly the period between twelve and twenty years of age.

Adrenin. One of the hormones secreted by the smooth (endocrine or ductless) glands called the adrenals. Plays a major part in emotional manifestations.

Aptitude. Capacity plus a probability that the individual will develop an ability. Aptitude usually refers to a rather narrow field of behavior, *e.g.*, musical or mechanical aptitude.

Attention. Focusing of the sense organs upon a particular source of stimulation. Attention may be contrasted to interest, which is long-term or enduring. Attention may be brief.

Attitude. A predisposition to act in a certain way. A state of readiness which influences a person to act in a given manner.

Atypical. Deviation from the "normal" behavior or growth pattern.

Autonomy. See *Functional autonomy.*

Behaviorism. A viewpoint (or school) of psychology in which stress is placed on the primacy of external stimulation. The environment is considered to be prepotent. The phenomenon of "consciousness" is excluded from consideration.

Capacity. Potential for development. That which one is potentially capable of doing or being. (See also *Ability.*)

Catharsis. A process of cleaning out; specifically, a getting rid of unpleasant emotions or tensions through talking, writing, playing, drawing, etc. A means of emotional release.

Chronological age. The actual length of time an individual has lived since birth. Usually expressed in years and months. Synonymous with life age.

Compensation. Making up for a real or imagined deficiency by stressing the development of a skill or ability. Indirect compensation is the development of another skill than the one which is weak. Direct compensation is the expenditure of more time and energy to overcome the particular real or felt defect. Also, the erroneous belief that a weakness in one aspect of the personality is offset by a balancing strength.

Concomitant learning. Knowledge or skill which is not specifically aimed at but which accompanies the learning which is sought.

Conditioning. The process of getting the organism to respond to a substitute stimulus as though it were a natural stimulus for that behavior.

Configuration. A Gestalt term referring to the fact that stimuli occur in patterns rather than as isolated phenomena. Also connotes the fact that stimuli are not to be considered apart from the organism which is effected by the patterned stimuli.

Congenital. Existing at the time of birth. A condition not due to heredity but to birth or prenatal conditions.

Constant I.Q. The theory that I.Q. does not change—that apparent changes in I.Q. are due to deficiencies in the instruments for evaluating intellectual growth.

Control group. In an experimental situation, the group with which the experimental group is compared. All factors are held constant in the control group, while in the experimental group one factor is intentionally varied.

Correlation. 1. Numerical: A statistical concept used to indicate the degree of relationship between two sets of paired phenomena. Correlation varies from a −1.00 through 0.0 to a +1.00. 2. Subject matter: Relating what is learned in one subject matter area to that learned in another area, *e.g.*, mathematics and science, science and social studies, social studies and literature.

Cramming. An attempt to compress into one long learning period the study that should have been done over a period of days, weeks, or months. Cramming contrasts with spaced practice, which is short periods of regular study intermittently distributed over a prolonged period.

Defense mechanism. A kind of evasive behavior in which the individual seeks to avoid, or deny the existence of, conditions which make adjustment difficult.

Development. Change or increase in function due to experience and/or exercise. For *practical* purposes no sharp line of distinction can be drawn between growth and development.

Deviate. One who departs from the wide band of what is called normality in any measured trait. One who would be placed at either extreme end of the normal curve of distribution. (See also *Atypical.*)

Differentiation. 1. The process by which body parts and functions become increasingly distinct from other parts and functions. 2. The changed perception of a field of stimulation so the observer sees unique parts and values more clearly.

Discrete. Separate, distinct, or independent.

Education. The process by which behavior is changed and, ideally, improved through experience. Also, the formal situation in which the experiences are guided by an expert.

Genius. An individual who has achieved eminence through unusual accomplishment which is esteemed by his social group. The term should not be used to denote giftedness—which is the potential for the development of genius.

Gestalt. Shape, form, or configuration. More specifically, the name of a viewpoint in psychology that objects to simple cause-and-effect relations. The Gestalt view criticizes atomistic (fragmented) interpretations.

Gifted child. One who is unusually bright—who has an I.Q. in excess of 135–140. May also refer to special talents in a person whose intellect is only average. Should not be confused with genius.

Goals. The end or object toward which behavior is directed and which tends to satisfy a particular need of an individual.

Group test. A test which is administered to several subjects at one time.

Growth. Change and development as the result of the interaction of the organism with its environment. The word is sometimes restricted to mean increase in size as a result of multiplication of cells, *i.e.*, maturation.

Guidance. A process of careful study of the pupil which precedes or accompanies an interview or a series of conferences with a pupil. The study and conferences are aimed at helping the pupil become capable of making his own choices with wisdom.

Halo effect. The influence of one trait or behavior on the evaluation of other traits or behaviors.

Hereditary potential. The inborn possibility for development under favorable environmental conditions. The limits for development beyond which additional opportunity would be of no avail.

Hypothesis. A tentative conclusion or guess. The basis for testing a particular procedure either by experiment or observation.

Incentive. An external stimulus to action. Grades are thought by some persons to be a valuable incentive to learning.

Incidental learning. Information or skills acquired during the process of intentional learning, *e.g.*, learning to use the dictionary, bibliographical aids, etc., while writing a paper in literature, psychology, etc.

Identification. Placing oneself in another's position, *e.g.*, getting satisfactions from another's success or prestige.

Individual test. A test which is administered by one examiner to one subject at a time.

Insight. The perception of a functional relationship between various factors or phenomena in a problem situation. Often thought to be sudden but actually the result of a continuous growth and development.

Integration. A process of shaping facets of the personality into a harmoniously functioning whole. Sometimes used to indicate relationships between various subject-matter areas. The latter meaning is more frequently termed "correlation," thus leaving the word "integration" to refer to a condition of the organism in which subject matter has been functionally assimilated.

Intelligence. The developed ability of an individual to cope with his environment. The speed, facility and appropriateness with which one does school work and copes with the tasks of daily living.

Intelligence quotient (I.Q.). The ratio of mental age to life age. Specifically, mental age divided by chronological age multiplied by 100.

Interest. A personal attitude or feeling involving identification, or concern, about some person, situation or object. A feeling of oneness between person and object.

Interoceptors. Internal sensory organs mediating the stimuli which give rise to hunger and internal pain.

Learning. The modification of behavior through activity and experience which alters modes of adjustment to the environment.

Level of aspiration. The degree of difficulty of response that an individual will attempt to overcome. The quality of goal which an individual desires to achieve.

Maladjustment. Inadequate responses to the demands and problems of living in one's particular environment.

Maturation. The processes involved in progressive advancement toward maturity. Some references to the word imply growth from within (intrinsic) but increasingly it involves experience factors as well.

Maturity. Used in two senses in psychology. 1. The full development of the individual, achievement of adult behavior and proportion—achievement of maximum growth. 2. Achievement of conduct or growth and development appropriate to one's age. (An immature child is one who acts below his age level—a mature child is still a child but "acts his age.")

Mean. The sum of the scores divided by the number of cases. The average.

Median. The mid-point of a series of scores. The point at which there are an equal number of cases (scores) below and above.

Mental age. A numerical term to express the level of intellectual ability an individual has achieved to date. A mental age of ten years means an intellectual ability which is equivalent to the average achieved by children who are ten years old chronologically.

Mental discipline. The belief that "faculties" of the mind are stimulated to develop by exercise (usually rigorous). The belief that problem-solving ability in general is fostered by exercise in mathematics, that memory is cultivated by studying Latin, or that perseverance is generated by adversity.

Mental set. A temporary preparedness to act in a certain direction at a given time, *e.g.*, the disposition to study arithmetic at a given time—or resistance to such study. (Mental set is temporary, whereas readiness refers to a more or less permanent condition. A pupil may have achieved readiness for reading but not have the proper mental set for it.)

Molar. A comprehensive approach to the study of behavior. The "world view" of a set of phenomena. ("Molar" and "molecular" are relative terms, not points of antagonism.)

Molecular. An atomistic or fragmented approach to the study of behavior. The study of discrete bits of behavior. Analysis.

Morphology. The study of body types or structures in relation to the effect these have on personality development and personality manifestations.

Motivation. The process by which behavior is aroused or accelerated. Stimulation of activity toward a goal when previously there was little or no such behavior.

Need. A lack (or requirement) which unless fulfilled or on the way to fulfillment leads to lack of self-realization, frustration, or maladjustment. (See *Goals.*)

Negative transfer. A condition in which one learning hampers the acquisition of another learning.

Negativism. The personality characteristic in which one chronically opposes reasonable requests and requirements (a normal and desirable phase of development in some circumstances).

Neurosis. A minor mental or emotional disturbance. A condition in which the individual chronically falters and stumbles in the course of his daily living.

Neurotic. One who suffers from minor mental or emotional illness.

Norm. An average or typical measure of a trait, level of development, or behavior.

Normal curve. A graphical representation of the distribution of a set of scores made by an unselected group showing a few cases at the center of the distribution. The normal curve is often called the bell-shaped, or Gaussian, curve.

Objectivity. The characteristic of a test which indicates that it can be scored without danger of personal bias on the part of the scorer. A view in which opinion or wish has been eliminated.

Optimum. The most desirable or favorable degree, condition, or amount.

Organismic. Referring to the totality, or inclusiveness, of the individual. A view which considers the individual—his physical, mental, emotional, spiritual, past, and present status—and the situation in which he functions—his home, school, peer group, national setting, etc.

Overlearning. In memorizing, the repetition of a selection after it has been learned to the point of one successful reproduction. Applying oneself to the acquisition of a skill or knowledge beyond the point at which one can say it has been learned.

Percentile. A means of showing a standard value in terms of percent; *i.e.*, a score of 75 correct responses out of 100 items may have a percentile value of 90—which means that out of a theoretical group of 100 persons, 10 would exceed the score of 75 and 90 would score below that.

Perception. The mental apprehension of that which is physically seen, heard, or felt. Psychological awareness.

Permissiveness. The practice of allowing children freedom to act, play, and develop freely. The placing of limitations on rules, prohibitions, scolding, punishment. Permissiveness must, in a practical sense, be limited to the child's developed ability to act with prudence.

Perseveration. 1. The tendency for neural activities, once having been begun, to continue for a time. 2. The momentum one has to continue acting in a given direction. 3. The time, following learning, required for learning to be established.

Personality. The sum total of one's behavior and his potential behavior in terms of physical, emotional, moral, social, aesthetic, and spiritual aspects of living as viewed and conditioned by one's fellow human beings.

Profile. The graphical representation of a set of test scores which will show an individual's comparative strengths and weaknesses in the various measured traits.

Projective technique. Any of a number of means by which inner personality trends are made known and/or released. Fundamentally, projective techniques consist of the subject's adding structure (or reading structure into) unstructured situations—painting and interpreting pictures or ink blots, playing with toys, finishing a story, etc.

Plateau. The level part of a learning curve, representing a time during which no measurable progress is being made in terms of the particular item being investigated.

Proprioceptors. Sensory nerves located in muscles, tendons, and joints.

Psychological approach. Introduction of a unit of schoolwork in terms of its meaning or interest to the pupils in a particular class, contrasted with the logical approach, which starts at the beginning and follows a series of events through to their ending.

Puberty. The process by which the adolescent achieves sexual maturity.

Purposeful. Action carried on because it has a definite purpose which is discernible to the behaving person.

Purposive. Action which is directed toward satisfaction of certain needs, *e.g.*, breathing, moving or exercise, the speeding up of heart action during a strong emotion, etc. The subject may be and often is unaware of the purpose of the behavior or action.

Rapport. The feeling of oneness, or identity, which exists between two persons. A feeling of mutual concern and warm, friendly regard.

Rationalization. A process of false reasoning in which facts are twisted in order to justify a completed or contemplated act.

Readability. The characteristic of a written selection which describes the ease with which it can be understood. Length and difficulty of words and length of sentence are among the determining factors of readability.

Reading readiness. A stage of growth and development at which reading instruction will probably be effective and before which instruction will be relatively fruitless. Readiness for reading includes such factors as a mental age of 6.5 years, adequate sensory perception, emotional control commensurate with age, desire to read, and appropriate experiences.

Regression. A phase of development in which the individual reverts to a less mature level of conduct after having apparently achieved a higher level. This is often a normal phenomenon but can become chronic.

Regressive eye movements. Movements of the eyes back over a line of print to fixate upon a spot which is to the left (and on the same line) of a point which had previously been fixated. The eyes go back over material already once *visually* seen.

Reliability. In terms of tests and measurement, the characteristics of a test which indicate that results will be consistent. A second administration of the test (or an equivalent form) on the same subject or group would yield highly similar results.

Retroactive inhibition. The tendency for one experience to inhibit the recall of another; *e.g.*, of two groups who learn a set of nonsense syllables the one which rests recalls more of the first set than does the group which learns a second set before attempting to recall the first set.

Saltatory. Progressing suddenly—by leaps and bounds.

Socialization. The processes by which one makes himself an integral part of his living group.

Sociometry. A schematic device for studying human relations or social attractions and/or repulsions. A mapping of interpersonal likes and dislikes.

Specificity. Refers to the fact that such character traits as honesty, dependability, truthfulness are different in various contexts or situations; that is, honesty is specific to a situation—one is not equally honest in all circumstances.

Subjective. Influenced by personal opinions or wishes. Personal bias.

Standardized test. 1. A test for which norms have been established. (It has been given to large numbers of subjects and scores have definite expectancy values for given groups. 2. A test for which uniform conditions of administering and scoring must be followed.

Teacher's complex. The tendency of a teacher to rephrase the answer to a question in the precise words which were in his mind before the pupil responded. An indication of the teacher's eagerness to answer all the questions which arise.

Teleological. Being directed toward a goal or purpose; behavior designed in accord with a definite pattern.

Tension tolerance. The ability of an individual to withstand pressure, disappointment, and frustration. The capacity of an individual to bounce back after a rebuff or defeat.

Test battery. A group or combination of psychometric tests. Several tests rather than one are thought to give a more comprehensive basis for evaluating an individual.

Transfer of learning. The phenomenon of learning's being facilitated in situation *B* by virtue of common elements, ideals, or generalizations which have been derived from first having learned in situation *A*.

Validity. The characteristic of a test which indicates that it measures that which it is supposed to measure.

Will power. A strengthened resolve as a result of clarifying and increasing motivation and of a better and more convincing understanding of the advantages of the proposed course of action.

Worry. The process of turning a problem over and over in one's mind without arriving at a solution or hypothesis. A process of circular, as contrasted to straight-line, thinking.

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